JVC

SERVICE MANUAL

VHS VIDEO MOVIE

GR-S70EG/EK/EA/EG

for Germany
for Saudi Arabia

CCD
Charge Coupled Device

AF
AUTO FOCUS

JVC
Super VHS
videomovie
8x
GR-S70

Super VHS
videomovie

S VHS C VHS PAL 625

HQ
High Quality

SPECIFICATIONS (The specifications shown pertain specifically to the model GR-S70EG)

Format : S-VHS/VHS PAL standard
Power source : DC 9.6 V ⎓
Power consumption : 9 W
Signal system : PAL-type colour signal and separated Y/C signals comforming to PAL, 625 lines
Recording system : Luminance: FM recording
Colour: Converted sub-carrier direct recording
Conforms to "S-VHS" standard
Cassette : "S-VHS-C"/"VHS-C" cassette
Tape speed (SP) : 23.39 mm/sec
(LP) : 11.70 mm/sec
Recording time
Max. (SP) : 30 minutes (with SE-C30 cassette)
(LP) : 60 minutes (with SE-C30 cassette)

VIDEO
Output : 1 Vp-p, 75 ohms, unbalanced (via AV connector)
S/N ratio : More than 40 dB (with Rohde & Schwarz noise meter)

AUDIO
Output : –6 dBs, 1 k-ohm (via AV connector)
Microphone input : –68 dBs, high impedance, unbalanced
Pickup : 1/2" format CCD
Minimum required illumination : 10 lux (at F/1.4)
Illumination range : 10 – 100,000 lux
Lens : F/1.4, f = 8.5 – 68 mm, 8:1 two-speed power zoom lens with auto iris control and macro position, filter diameter 52 mm
Viewfinder : Electronic viewfinder with 0.6" black/white CRT
Shutter speed : Switchable (1/250, 1/500, 1/1000 sec.)
Colour temperature switching : Switchable (3,200 K/4,500 K/5,500 K)
White balance adjustment : Full-auto/preset standard
Operating temperature : 0°C to +40°C
Operating humidity : 35 % to 80 %
Storage temperature : –20°C to +50°C
Weight : 1,2 kg (with viewfinder)
Dimensions : 111(W) x 150(H) x 253(D) mm (incl. viewfinder)

AA-V6EG SPECIFICATIONS
Power requirement : AC 110 – 240 V∿, 50/60 Hz
Power consumption : 23 watts
Output : DC 14 V ⎓ 1.1A (Charge)
DC 9.6 V ⎓ 1.2 (VideoMovie)
Charging system : Constant current, peak detection, timer controlled
Dimensions : 150(W) x 42(H) x 69(D) mm
Weight : Approx. 380 g

C-P6U SPECIFICATIONS
Type : VHS cassette adapter
Dimensions : 188(W) x 25(H) x 104(D) mm
Weight : 240 g
Accessory : "R6"-size battery x 1

Provided accessories:

AC power adapter/battery charger	AA-V6EG
Cassette adapter	C-P6U
Cassette tape	SE-C30
Battery pack	BN-V6GU
AV/S output cable	VC-V8961SE
Battery for clock operation	CR2025
Shoulder strap	
Title Easel	

Specifications shown are for SP mode unless otherwise specified.
Design and specifications subject to change without notice.

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No. 86109
May 1990

NOTE: Packing assembly (section 6.2 to 6.6) is the only difference among models GR-S70EG/EK/EA /EG for Saudi Arabia/EG for Germany.

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▨) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

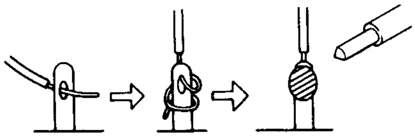


Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

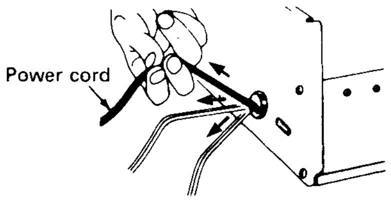


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

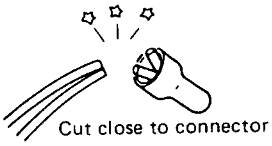


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

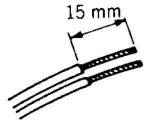


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

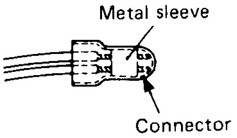


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

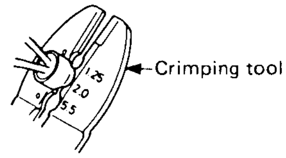


Fig. 6

(5) Check the four points noted in Fig. 7.

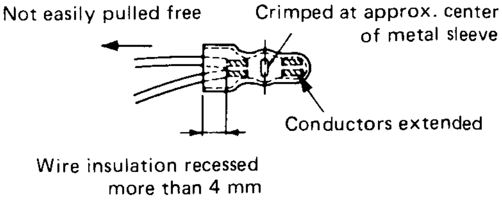

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

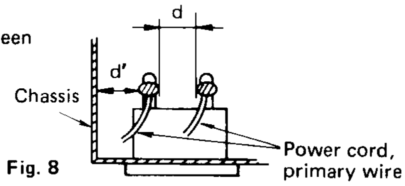


Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   Measuring Method: (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

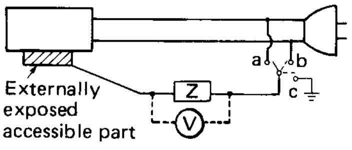


Fig. 9

5. **Grounding (Class I model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   Measuring Method:
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

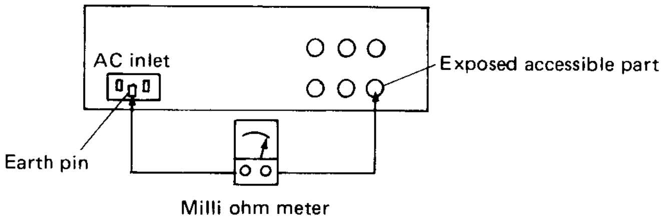


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 900 V 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

JVC

INSTRUCTIONS

GR-S70

CAMERA-RECORDER/PLAYER

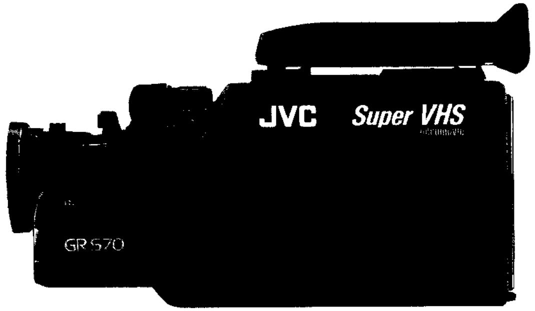
MANUEL D'INSTRUCTIONS: CAMERA-ENREGISTREUR/LECTEUR
BEDIENUNGSANLEITUNG: KAMERA-RECORDER
MANUAL DE INSTRUCCIONES: CAMARA/GRABADORA
GEBRUIKSAANWIJZING: KAMERA/RECORDER
BRUKSANVISNING: KAMERA/BANDSPELARE
MANUALE DI ISTRUZIONI: TELECAMERA/REGISTRATORE

Specifically for the GR-S70E/AA-V6EG
Spécial pour le GR-S70E/AA-V6EG
Für modellausführung GR-S70E/AA-V6EG
Especialmente para le GR-S70E/AA-V6EG
Speciaal voor de GR-S70E/AA-V6EG
Speciellt avsedd för GR-S70E/AA-V6EG
Specifico per il GR-S70E/AA-V6EG

Super VHS
videomovie
S-VHS-C VHS PAL 625
HQ High Quality

CCD
Charge Coupled Device

AF
AUTO FOCUS



YU30052-133

SAFETY PRECAUTIONS

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

This equipment should be used with DC 9.6 V ⎓ only.
CAUTION:
To prevent electric shocks and fire hazards, do NOT use any other power source.

The AA-V6EG AC Power Adapter/Battery Charger should be used with 110 – 240 V∿, 50/60 Hz only.
Caution:
To prevent electric shocks and fire hazards, do NOT use any other power source.

IMPORTANT (In the United Kingdom)
Mains Supply (240 V∿, 50 Hz only)

IMPORTANT

Do not make any connection to the Larger Terminal coded E or Green. The wires in the mains lead are coloured in accordance with following code:

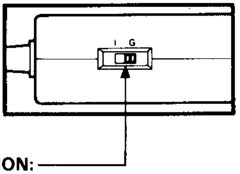
Blue to N (Neutral) or Black
Brown to L (Live) or Red

If these colours do not correspond with the terminal identifications of your plug, connect as follows:
Blue wire to terminal coded N (Neutral) or coloured black.
Brown wire to terminal coded L (Live) or coloured Red.
If in doubt – consult a competent electrician.
Note
We recommend that you should disconnect the AC cord from the outlet.

S-VHS-C 625   VHS-C PAL

Cassettes marked "S-VHS-C" and "VHS-C" can be used with this VideoMovie. However, S-VHS recordings are possible only with cassettes marked "S-VHS-C".

Warning on lithium battery
The battery used in this device may present a fire or chemical burn hazard if mesused. Do not recharge, disassemble, heat above 100°C or incinerate.
Replace battery with Panasonic (Matsushita Electric) CR 2025; use of another battery may present a risk of fire or explosion.
- Dispose of used battery promptly.
- Keep away from children.
- Do not disassemble and do not dispose of in fire.



ATTENTION:
The system select switch on the side of the optional RF-V3E RF unit has been set to G (Continental PAL, 5.5 MHz).

CAUTION:
To prevent shock, do not open the cabinet. No user serviceable parts inside. Refer servicing to qualified personnel.

NOTES:
- The rating plate (serial number plate) and safety caution are on the bottom of the main unit.
- The rating plate (serial number plate) of the viewfinder is on its bottom.
- The rating plate (serial number plate) of the AC power adapter/battery charger is on its bottom.

The provided viewfinder is the VF-V65E. Do not use any other viewfinder with athe GR-S70E.

This unit is produced to comply with Directives 76/889/EEC, 82/499/EEC, 87/308/EEC and Standard IEC Publ. 65.

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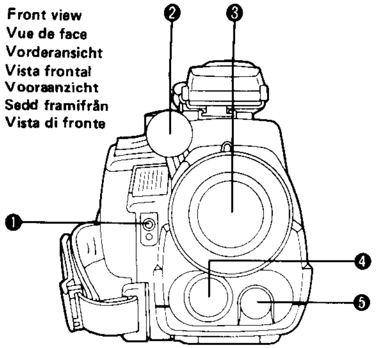
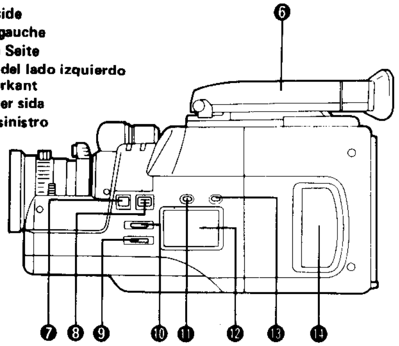
Printed in Japan

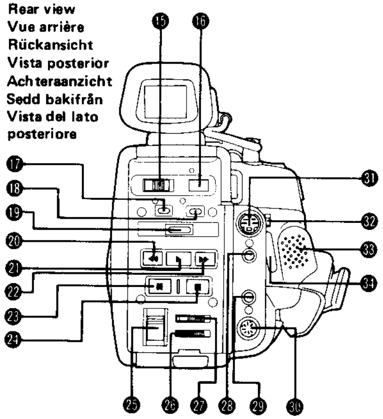
Front view
Vue de face
Vorderansicht
Vista frontal
Vooraanzicht
Sedd framifrån
Vista di fronte



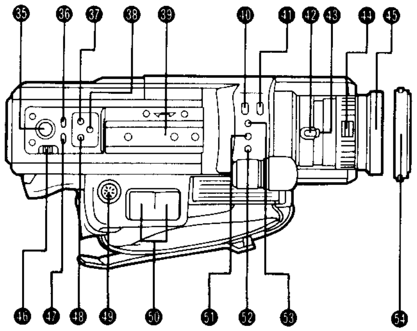
Left side
Côté gauche
Linke Seite
Vista del lado izquierdo
Linkerkant
Vänster sida
Lato sinistro



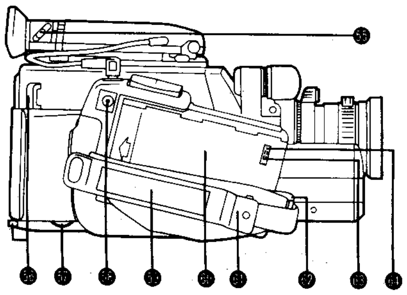
Rear view
Vue arrière
Rückansicht
Vista posterior
Achteraanzicht
Sedd bakifrån
Vista del lato posteriore



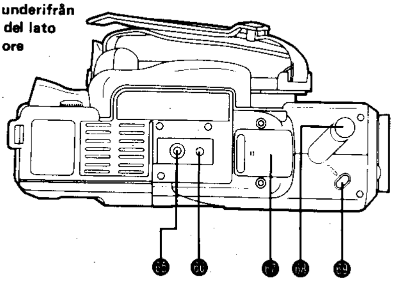
Top view
Vue de dessus
Draufsicht
Vista superior
Bovenaanzicht
Sedd ovanifrån
Vista del lato superiore



Right side
Côté doit
Rechte Seite
Vista del lado derecho
Rechterkant
Höger sida
Lato destro



Bottom view
Vue de dessous
Unteransicht
Vista inferior
Onderaanzicht
Sedd underifrån
Vista del lato inferiore



PRECAUTIONS

For safety, strictly observe the following instructions.
- Do not open the cabinet.
- Prevent inflammables, water and metallic objects from entering the unit.
- Do not disassemble or modify the unit.
- Do not use the unit when there is lightning in the vicinity. Disconnect the power cable of connected equipment.

Avoid using the unit under the following conditions:
- Places subject to excessive humidity or dust.
- Near appliances generating strong magnetic or electric fields (speakers, broadcasting antennas, etc.).
- Places subject to soot or steam such as near a cooking stove.
- Places subject to excessive shock or vibration.
- Near a television set (rolling pictures or howling might result).
- Extremely hot places.

Do not expose the unit to high temperatures over 40°C for long periods.
If the unit should be subjected to direct sunlight, or left in a closed car in summer, or placed near a heater, the CCD and the auto-focus sensor may deteriorate and the cabinet may become deformed. Furthermore, this also may cause the transistors and other electronic and mechanical parts to malfunction. Remember the following:
- Do not leave the unit in places of over 30°C.
- Do not use the unit in places of over 40°C.
- Do not use the unit in places of below 0°C.
- Protect the unit from excessively dry or humid conditions (below 35 % or above 80 % humidity).
- For long storage, select a place between -10°C and 30°C.

Take special care for protection of the unit.
- Do not allow the unit to become wet.
- Do not leave the unit in closed cars on hot summer days.
- Take special care not to drop the unit or strike it against hard objects. Protect from shocks during transportation.

Make it a rule to observe the following instructions.
- Do not remove the battery pack or disconnect other power supply units during recording or playback before pressing the POWER switch to OFF. If not observed, this will cause tape damage.
- When the unit is not in use, remove the battery pack.

Keep the lens and viewfinder eyepiece always clean.
- When the lens if dirty or dusty, blow it off first and then gently wipe with a soft brush or lens cleaning paper.
- The lens is likely to become moldy if left dirty.

Serious malfunctioning

If malfunctioning occurs, stop using the unit immediately and consult your local JVC dealer.

Be careful not to damage the CCD.
- Do not keep the lens directed at extremely bright objects such as the sun or other light sources for long periods. Although the CCD is less susceptible to such burn than a tube would be, caution should be exercised when using this unit. Most importantly, the lens should be capped except while actually shooting.
- If the aperture is left open, even while the camera is not being powered, the CCD may be damaged.
- Do not direct the eyepiece of the viewfinder at the sun.

Auto-focus information.
- Do not touch the focus ring while the auto-focus mechanism is in operation as this could damage the auto-focus mechanism.
- When a filter or a special-effect lens is to be attached to the end of the lens, be sure to turn power off or switch from the Auto-focus mode to the Manual mode. NEVER attempt to attach a filter or lens while the auto-focus mechanism is operating as this will result in malfunctioning. (If a teleconversion or wide-angle conversion lens is attached, the Auto-focus mode cannot be used.)

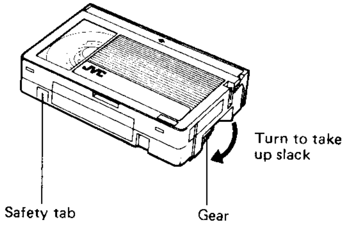
Handle the unit carefully.
- Protect the microphone from excessive shocks.
- Do not carry the unit by holding it only by the viewfinder.

Moisture condensation
- You have observed that pouring a cold liquid into a glass will cause drops of water to from on the glass's outer surface. This same phenomenon occurs on the head drum of a VideoMovie when it is moved from a cool place to a warm place, after heating a cold room, under extremely humid conditions or in a place directly subjected to the cool air from an air conditioner.
- Moisture on the head drum can cause severe damage to the video tape, and can lead to internal damage to the VideoMovie itself.
- If moisture condensation occurs on the head drum, a condensation warning appears above the counter display and the unit enters the Stop mode, unable to function. In such a case wait for a few hours until the indicator disappears.

Maintenance
- When the cabinet is dusty, clean by gently wiping with a soft cloth.
- Avoid the use of strong cleaning agents such as benzine or alcohol as they may damage the cabinet.
- Cleaning should be done only after the battery pack has been removed or other power units have been disconnected.

VIDEO CASSETTES

- The GR-S70E employs only the cassettes carrying respectively the S-VHS-C and the VHS-C marks.
- Recording onto prerecorded tapes automatically erases the previously recorded video and audio signals.
- An inverted cassette cannot be inserted.
- Do not load and unlaod the cassette repeatedly without allowing the tape to run at all. This will slacken the tape and thereby damage it.
- Make certain befor loading the cassette that the tape is not slack. If there is any slack, turn the gear on the cassette in the direction of the arrow to take up slack.
- The cassette is equipped with a safety tab to prevent accidental erasure. When the tab is removed, recording is impossible. If you wish to record on a cassette whose tab has been removed, use adhesive tape to reseal the slot.
- To avoid excessive exposure to dust and fingerprints, do not open the front tape cover.



Storage of cassettes

- Avoid exposing the cassettes to direct sunlight. Keep them away from heaters.
- Avoid storing the cassettes in humid or dusty places.
- Do not drop the cassettes. Do not expose them to violent vibrations or shocks.
- Do not expose the cassettes to strong magnetic fields (near a motor, transformer or magnet).
- Place the cassettes in cassette cases and position them vertically.

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FEATURES

- Super VHS recording and playback for superlative picture quality.
- Separate Y/C (luminance/chrominance) terminals for higher picture quality.
- Allows direct playback with no additional components necessary.
- Flying erase head for precise, quality assemble/insert editing.
- Insert editing function.
- Audio dubbing facility.
- Retake function for quick re-recording of scenes when necessary.
- Ultra-compact and ultra-lightweight a mere 1.2 kg.
- 3-Page Digital Superimpose function for mixing titles or illustrations into a live recording.
- Multiple-speed electronic shutter for sharp clear playback of fast-action shots – 1/1000, 1/500, 1/250, and 1/50 (standard)-second.
- Newly developed high-resolution 1/2" field-storage type CCD (Charge Coupled Device) pickup.
- One-button full-auto operation of focus, exposure, and white balance.
- Powerful, two-speed 8:1 power zoom.
- HQ (High Quality) System for VHS recording and playback.
- Maximum of 60-minute recording time on a single tape in LP mode.
- High-sensitivity/low-lag design: allows shooting in light as low as 10 lux.
- Image Sensing auto-focus.
- Automatic Colour Tracking white balance with three preset positions.
- Backlight compensation button. (BLC)
- Audio/video fader linked to start/stop trigger.
- Animation function using the Remote Control Unit RM-V15U (optional).
- Large, easy-to-read LCD (Liquid Crystal Display).
- Ultra-compact adjustable electronic viewfinder (monochrome CRT, 0.6-inch screen) with diopter control, also for instant on-the-spot playback.
- Selectable automatic date recording function.
- Recordable date/time display.
- Elapsed recording time counter.
- Second recording start/stop button provided on top of GR-S70E.
- Dubbing mode switch provided for best results when dubbing.
- Selectable quick review function.
- One-button recording standby mechanism.
- Master Edit Control system: allows control of both GR-S70E and connected designated JVC VCR using GR-S70E's controls, and preroll editing for edits free of transition-point gaps and noise.
- Shuttle Search in both directions.
- Unique grip battery doubles as palm grip, saving weight and space.
- Ergonomic design with palm grip and thumb rest for trigger control.
- Trigger alarm system for preventing recording errors.
- Three-way power supply flexibility: battery pack, AC power adapter, and car battery.

S-VHS vs. VHS

- VHS is the world's most popular video format. If you owned a VCR or camcorder, most likely it was a VHS machine.
- **S-VHS is a new video sub-format based on VHS. It offers superior picture quality with a horizontal resolution by shifting the FM carrier frequency of the luminance signal from the conventional 3.8 – 4.8 MHz range to a higher one of 5.4 to 7 MHz.**
- The GR-S70E is equipped for recording and playback in both the S-VHS and VHS modes. Therefore, you can still record and play back in VHS.

The GR-S70E is designed to be used with PAL-type colour television signals. It cannot be used for playback with a television of a different standard. However, live recording and viewfinder playback are possible anywhere. Use the BN-V5GU/BN-V6GU/BN-V7GU battery packs and, to recharge them, the provided multivoltage AC power adapter/battery charger. (An appropriate conversion adapter may be necessary to accommodate different designs of AC outlets in different countries.)

CONTROLS AND CONNECTORS

Refer to the diagrams on the front foldout page.

① **External microphone jack (MIC)**

② **Exclusive microphone**
Omnidirectional condenser microphone for simultaneous sound recording.

③ **8:1 zoom lens**
F/1.4, f = 8.5 – 68 mm. Filter diameter: 52 mm.

④ **Auto-focus sensor window**
Allows light to enter for measuring the camera-to-subject distance.

⑤ **White balance sensor window**
Allows light to enter for white balance adjustment.

⑥ **Electronic viewfinder**
For monitoring scenes being shot or the playback picture after recording. Several indicators are included, as well as the date/time or elapsed recording time if selected.

⑦ **FULL AUTO button**
Pressing this button puts the focus and white balance under automatic control and selects the standard shutter speed. Auto-focus can be cancelled by pressing the FOCUS button; auto white balance can be cancelled by pressing the W.BALANCE button; the high-speed shutter can be selected by pressing the SHUTTER button. Pressing the FULL AUTO button in the full-auto mode has no effect.

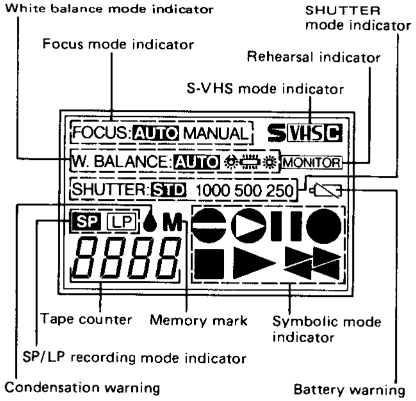
⑧ **FOCUS select button**
Switch to AUTO for automatic focus, and switch to MANUAL to focus manually. Check on the LCD. The focus mode is reversed each time this button is pressed. The auto-focus mode can also be selected (together with the auto-white mode) by pressing the FULL AUTO button.

⑨ **SHUTTER select button**
Pressing this button switches the shutter between 1/1000 ("1000"), 1/500 ("500"), 1/250 ("250")-second high-speed shutter and 1/50-second ("STD") speeds, as displayed on the LCD. The standard shutter speed can also be selected by pressing the FULL AUTO button.

⑩ **W. BALANCE select button**
The white balance is manually selectable using this button. Press once to display the current white balance mode in the LCD. Continue pressing to cycle through the available modes.
❋ : Halogen or tungsten lighting.
▭ : Fluorescent lighting.
☼ : Daylight.
AUTO: Automatic white balance adjustment.

⑪ **Counter MEMORY button**
Press this button after resetting the counter to "0" at a point on the tape you want to locate later, and the tape will stop automatically at the counter reading of around "0" during rewind or fast forward.

⑫ **LCD (liquid crystal display)**



Tape counter:	Shows from "0" to "9999".
Battery warning:	Blinks when the battery power becomes insufficient for normal operation.
Condensation warning:	Appears when excessive condensation occurs inside the unit.
Memory mark:	Appears when the MEMORY button is pressed.

Symbolic mode indicator

STOP:	■	REWIND:	◀◀	RETAE FORWARD:	▶ ▶▶ Blinking
PLAY:	▶	FAST FORWARD:	▶▶	MASTER EDIT CONTROL.	▶ Blinking
PAUSE: (STILL)	❚❚	REVERSE SHUTTLE SEARCH:	▶ ◀◀	TAPE END WARNING:	● Blinking
RECORD:	●	FORWARD SHUTTLE SEARCH:	▶ ▶▶	INSERT:	⊳
RECORD PAUSE:	❚❚●	RETAKE REWIND:	▶ ◀◀ Blinking	AUDIO DUB:	⊖
QUICK REVIEW:	❚❚● Blinking				

⑬ **Counter RESET button**
Press to reset the counter to "0".

⑭ **Cassette holder**
Insert an S-VHS-C or a VHS-C video cassette for recording or playback.

⑮ **POWER switch**
Slide to turn the power on. The Stop indication appears on the LCD. Slide again to switch off power.

⑯ **REC standby button**
Press to engage the Recording standby mode. To start recording, press either of the recording start/stop button ㉞ or ㉟ .

⑰ **INSERT/MONITOR button**
Push this button when you wish to rehearse shots before actually recording them. This function allows you to view the scene on the viewfinder without recording it. Push the STOP button to release it. To enter the Insert Edit mode, press this button while in the Recording Standby mode.

⑱ **AUDIO DUB button**
Press this button together with the PLAY button for audio dubbing.

⑲ **QUICK REVIEW/EDIT button**
If you want to review the end of the recorded segment for confirmation, press this button from the Record-Pause mode; the tape will be rewound for about two seconds of programme time and played back automatically for this section, after which it will stop in the Record-Pause mode in standby for the next shot. When dubbing from the GR-S70E to a designated JVC VCR, it also functions to begin VideoMovie playback in synchronization with video deck recording (see "Using the Master Edit Control System", page 28).

⑳ **REW/SHUTTLE SEARCH/RETAKE button**
Pressing this button in the Stop mode rewinds the tape; pressing it in the Play mode allows fast playback in reverse. (three times normal speed in SP mode, seven times normal speed in LP mode.)

㉑ **PLAY button**
Press to start playback. When this button is pressed when the unit is in the REC PAUSE mode, the unit will enter the REC mode.

㉒ **FF/SHUTTLE SEARCH/RETAKE button**
Pressing this button in the Stop mode fast-forwards the tape; pressing it in the Play mode allows fast playback. (three times normal speed in SP mode, seven times normal speed in LP mode.)

㉓ **PAUSE/STILL button**
Press to view a still picture during playback or pause playback. When this button is pressed in the REC mode, the unit will enter the REC PAUSE mode.

㉔ **STOP button**
Press to engage the Stop mode.

㉕ **EJECT switch**
To open the cassette holder.

㉖ **DUBBING ON/OFF switch**
Normally, set to OFF. For best picture quality when dubbing, set it to the ON position.

㉗ **SP/LP recording mode select switch**
Set to SP to record at standard tape speed. Set to LP to record at a slower tape speed, allowing an extended recording time of up to one hour with a single cassette.

㉘ **REMOTE control jack**
For connection of the optional RM-P1U pause remote control unit or RM-V15U remote control unit.

㉙ **Earphone jack (PHONE)**

㉚ **AV OUT connector**
Both audio and video signals can be delivered from this connector. For playback with a TV set not equipped with A/V terminals, connect the RF-V3E RF unit (optional) to this connector and to the TV. To dub from this unit, connect the A/V input connectors of a second recorder to this connector, using the A/V output cable. To play back from this unit to a TV set, make a connection between this connector and the TV's A/V input terminals using the A/V output cable.

㉛ **S-VIDEO OUT connector**
For connection to a television equipped with an S-VIDEO input.

㉜ **ALARM ON/OFF switch**
Switch to ON to engage the trigger alarm system. Switch to OFF when you do not wish to use this system.

㉝ **Thumb rest**
Place your thumb on this grooved area next to the start/stop switch between switch operations.

㉞ **Recording start/stop button (Trigger button)**
Press this button in the Recording Standby mode to start recording. Pressing it again re-engages the Recording Standby mode.

㉟ **Second recording start/stop (SUB TRIGGER) button**
Functions exactly as the other recording start/stop button, for use when recording with the GR-S70E held low.

㊱ **DATE/TIME ON/OFF button**
Press this button when you do not wish to record the date/time. This will remove date/time indications from the viewfinder. Press again to record date/time. Date/time will reappear in the viewfinder.

㊲ **DATE/TIME SELECT button**
Use to select the portion of the clock or date settings to be changed. Cycles through the year, month, day, hour, and minute settings. To end adjustment, press once after selecting the minute portion.

㊳ **DATE/TIME MODE button**
Press this button to select the date/time display and Recording mode. It cycles through the modes in the following order:

Auto date record reserve → **Date display** → **Date/time display** → **Time display**

The auto-date-record function automatically displays and records the date for 5 seconds upon turning on the power and beginning recording. Before recording begins, this mode is indicated in the viewfinder by auto date record reserve indication "-.-.-".

㊴ Viewfinder mount

㊵ TITLE PAGE button
Press this button to select which page of memory you wish to store your title in. This button only functions when the title is displayed in the viewfinder.

㊶ TITLE ON/OFF button
Press to mix memorised title or illustration with action being recorded. Press again to end mixing process.

㊷ Manual zoom lever
Use to turn the zoom ring manually.

㊸ Macro button
Turn the zoom ring while pressing this button for macro shooting.

㊹ Manual focus ring
Use to turn the focus ring manually.

㊺ Lens hood

㊻ REC TIME ON/OFF switch
When this switch is set to ON, the viewfinder displays the elapsed recording time. Switch to OFF to cancel the display.

㊼ REC TIME RESET button
Press this button to reset the elapsed recording time to zero. Ejecting the cassette also does this.

㊽ DATE/TIME SET button
Use to set the built-in clock and date function.

㊾ Viewfinder cable connector (EVF)
Connect the viewfinder cable.

㊿ Power zoom buttons
For automatic zooming at slow speed, press lightly. For regular speed zooming, press firmly. "T" is for telephoto zooming and "W" is for wide-angle zooming.

(51) IMAGE REVERSE button
Press this button to activate the title reverse effect. The function will switch from positive to negative mode with successive pressing of this button.

(52) TITLE MEMORY button
Up to three "pages" of titles can be stored. The digital memory is maintained by the lithium battery which powers the unit's clock. Each time the TITLE MEMORY button is pressed, a previously stored title will be erased, and a new one will be stored in its place in the designated page of memory.

(53) COLOR button
Press this button to select the colour for a title or illustration. The colour choices cycle as follows: black, white, yellow, cyan blue, green, magenta, red, blue. Press this button repeatedly until the desired colour appears.

(54) Lens cap
Cap the lens when not in use.

(55) Dioptric adjustment control
Adjusts the viewfinder lens to suit the operator's eyesight.

(56) Eyelets for shoulder strap

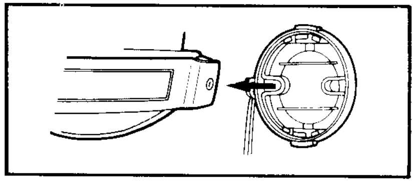
(57) TRACKING control
Minimises noise bars, if observed, during playback.

(58) DC IN terminal
For connection of the provided AA-V6EG AC power adapter/battery charger or optional BH-V5E car battery charger for DC power supply.

(59) Grip strap
Secures the operator's hand to the hand grip. Adjusts to fit hand size.

(60) Battery mount
The battery pack serves as a contoured handgrip when attached to the battery mount.

(61) Lens cap hook
This keeps the lens cap from swinging during shooting.



(62) Battery pack release lever

(63) VIDEO OUT switch
Selects the signal output via AV OUT connector ㉚.

Y/C: Set to this position to supply an S-VHS signal (Y/C separated video signals) to a component connected to the AV connector.

CVBS: Set to this position to supply an ordinary video signal (composite video signal) to a component connected to the AV connector.

(64) S-VHS switch
When switched to ON (AUTO), the unit will automatically select the correct mode depending on the type of the cassette tape used. When cassette tapes marked S-VHS-C are used, S-VHS mode will be selected and S-VHS-C will be indicated on the LCD display. If cassette tapes marked VHS-C are used, the unit will select the VHS mode and no indication will appear. When this switch is set to OFF, the VHS mode will be selected regardless of the cassette tape used.

Note:
Be sure to set this switch before attaching the battery pack.

(65) Tripod mounting socket

(66) Stud hole

(67) CLOCK battery compartment
Holds the lithium battery that powers the date, time and title memory function.

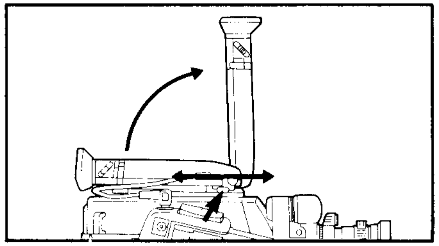
(68) BLC button
Iris control is always automatic. For backlight compensation, press this button. While it is being pressed, the iris is 1 – 2 f-stops wider than the automatic setting.

(69) FADER button
To fade out the picture to a black blank screen, press this button, then press the recording start/stop button to start fading out. To fade in from a black blank screen, press this button, then press the recording start/stop button to start fading in.

BASIC PREPARATIONS

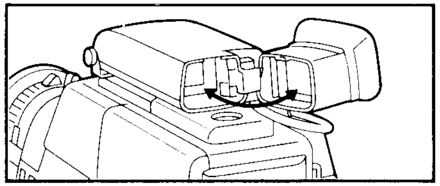
Switch off power before mounting or removing viewfinder.

Positioning the viewfinder



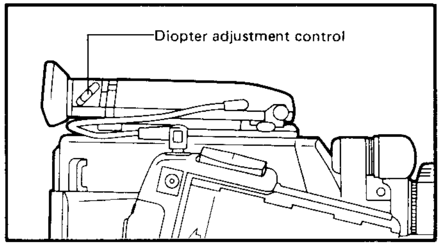
The viewfinder can be positioned for best viewability. It can slide forward or back while pressing the knob and can be tilted up 90°.

Opening the eyepiece



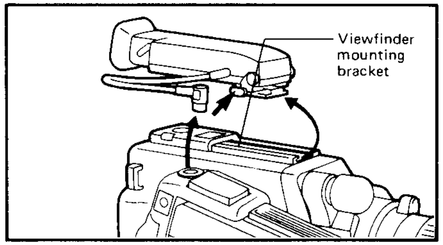
The veiwfinder eyepiece can be opened for cleaning or better viewability in playback.

Diopter adjustment



The viewfinder lens can be adjusted to suit the operator's eyesight by sliding the diopter adjustment control.

Removing the viewfinder

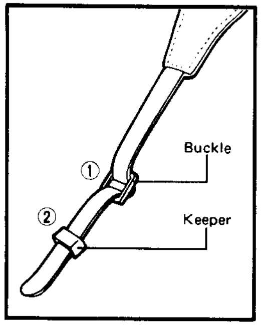


1. Pull out the viewfinder cable.
2. Slide the viewfinder out of the bracket while pressing the knob.

To mount the viewfinder:
Align the viewfinder's coupling fixture with the mounting bracket on the body and slide the fixture into the bracket while pressing the knob.
Connect the viewfinder cable to the viewfinder cable connector (EVF).

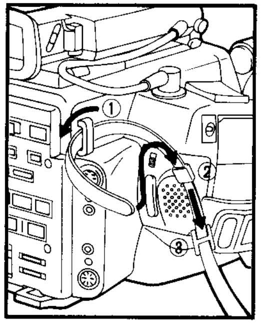
Attaching the shoulder strap

1



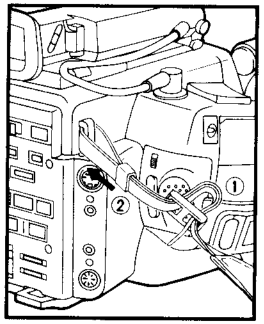
Slide the strap buckle and strap keeper off the end of the strap. Replace them on the strap: the buckle first ①, then the keeper ②.

2



Loop the end of the strap over the top of the eyelet ①, then, folding it back, thread the end of the strap first through the keeper ②, then the buckle ③. Making sure that the strap is not twisted, repeat the above procedures to attach the other end of the strap to the other eyelet.

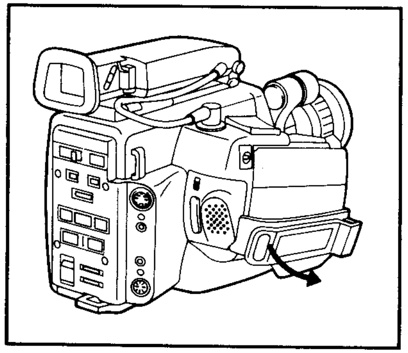
3



Adjust the shoulder strap to the desired length ①, then slide both keepers up snug against the eyelets to prevent the strap from slipping ②.

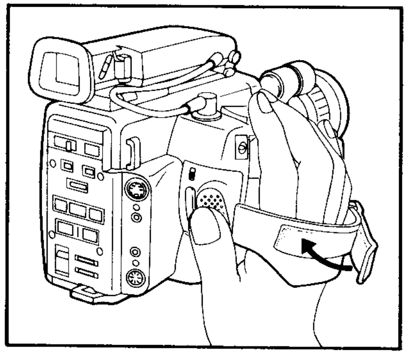
Adjusting the grip strap

1



Separate the Velcro strip to expand the loop.

2



Pass your right hand through the loop and grasp the lens grip. Adjust the length of the strap to suit your hand size and refasten the Velcro strip.

POWER SUPPLY SYSTEM

The convenient 3-way power supply system gives you a choice of the most appropriate power supply unit, depending on the application.

CAUTION
- No function is available without power supply.
- Do not use any power supply other than specified.
- Never attempt to use these power supply units with any equipment other than the VideoMovie.

When AC power is not available

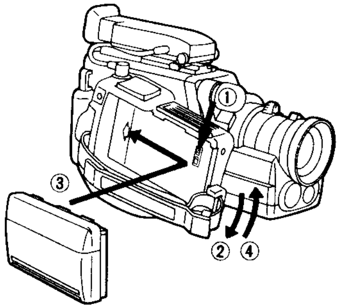
Use the battery packs:
- BN-V5GU (Regular)
- BN-V6GU (High-capacity)
- BN-V7GU (Super High-capacity)

Note:
The battery pack has been kept in the uncharged state for shipment. Therefore, before use, be sure to charge it. See page 32.

Attaching the Battery Pack

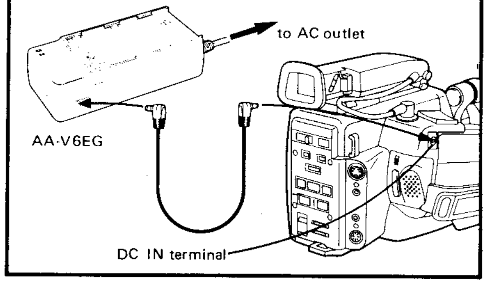
① Set the S-VHS switch (See page 7.)
② Pull down the battery pack release lever.
③ Align the battery pack over the outline in the battery pack mount, and slide the battery pack into place in the direction of the arrow.
④ Push up on the battery pack release lever, until it locks into place.

To remove the battery pack, pull down the battery pack release lever and slide out the battery.



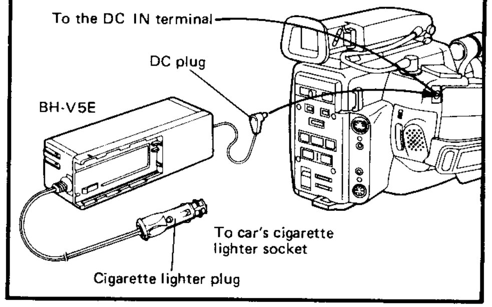
With AC power

Use the provided AA-V6EG AC power adapter/battery charger.



In a car

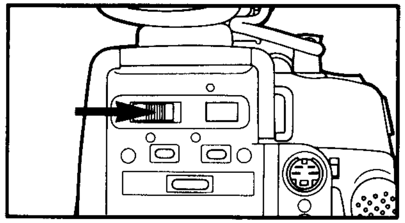
Use the optional BH-V5E car battery charger.
- Leave the car's engine idling when using the car battery. (For use with 12 V negative-grounded cars only.)



LOADING AND UNLOADING A VIDEO CASSETTE

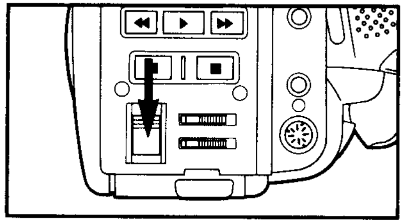
LOADING

1



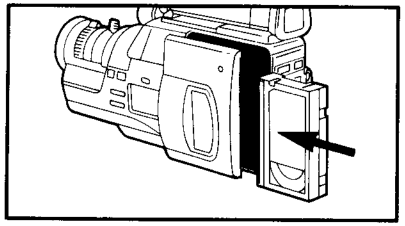
Slide the POWER switch to turn power on.

2



Open the cassette holder by pressing the EJECT button.

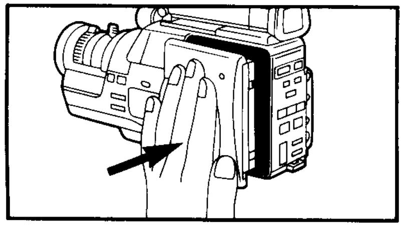
3



Insert the cassette with its label facing outward.

Ensure that tape is not slack inside the cassette, then load the cassette correctly. See page 3.

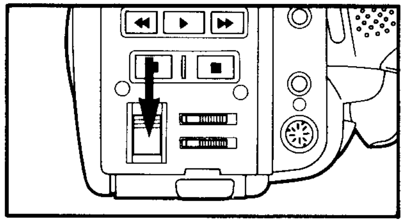
4



Close the cassette holder by pushing its centre area.

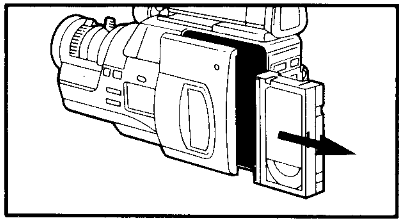
UNLOADING

1



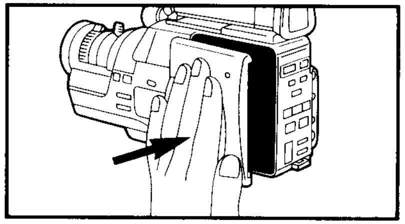
Make sure the unit is in the Stop mode. Press the EJECT button. The cassette holder will open.

2



Remove the cassette.

3

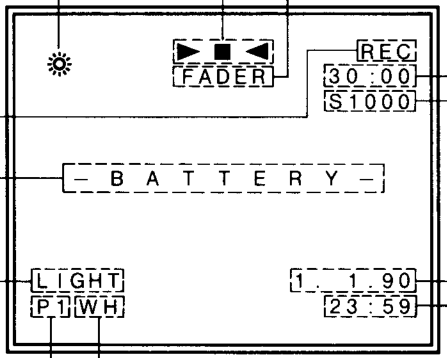


Close the cassette holder by pushing its centre area.

- When not in use, switch off power.

Note:
- Do not repeat loading and unloading of the cassette without running the tape, as this will slacken the tape, causing tape damage.

VIEWFINDER INDICATIONS



Focus mode

▶	Camera is focused beyond subject
■	Focus is correct
◀	Camera is focused in front of subject
–▶■◀–	Low contrast warning (auto/manual)
No indication	Auto-focus is operating

White balance mode setting

☼	Daylight.
▭	Fluorescent lighting.
✺	Halogen or tungsten lighting.
No indication	Auto white balance is operating.

Fading mode

FADER	Fade function is engaged.
–FADER–	Fading is being performed.
No indication	Fade function is not engaged.

Elapsed Time Indicator

Lithium battery warning

▶E	Lithium battery is exhausted, or not yet installed.

S1000
1/1000-second shutter mode is engaged
S500
1/500-second shutter mode is engaged
S250
1/250-second shutter mode is engaged
No indication
1/50-second (standard) shutter mode is engaged

Date indications

Time indications
24 hour indications

–.–.–.	Auto Date Rec is engaged .

Title Page indicator

P1	First page
P2	Second page
P3	Third page

Title Colour indications

BK	Black
WH	White
YL	Yellow
CY	Cyan blue
GR	Green
MG	Magenta
RD	Red
BL	Blue

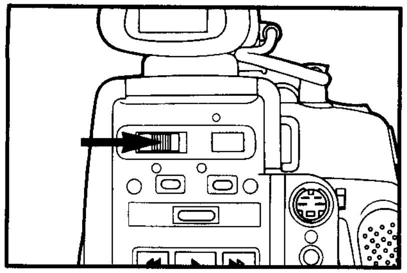
–LIGHT–	Low-light warning
–BATTERY–	Low-battery warning

Operation mode

REC	Recording is being performed in SP mode
LP REC	Recording is being performed in LP mode
—	Recording Standby in SP mode is engaged
LP —	Recording Standby in LP mode is engaged
–REC– or –LP REC–	Tape-end warning (blinking will begin a few minutes before tape ends)
No indication	Stop, Play or Rehearsal mode is engaged

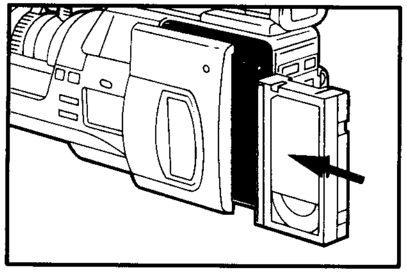
RECORDING OPERATIONS

1



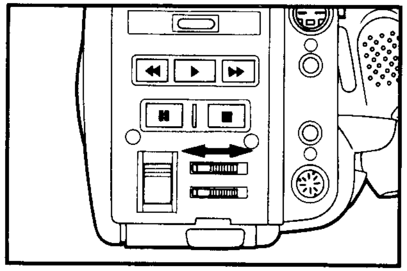
Slide the POWER switch to turn power on.

2



Insert a video cassette correctly (with its safety tab in place).

3

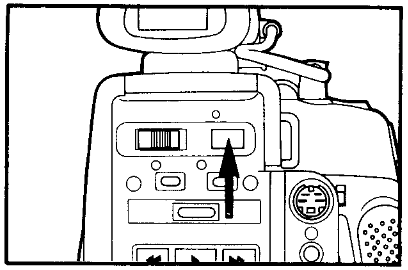


Set the tape speed to SP or LP.

One-hour recording

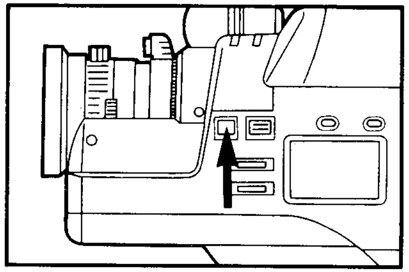
- ●To record longer on a single cassette, use the LP (Long Play) mode.
- ●For LP recording, a higher-capacity battery pack may be used.
- ●SP: 30 minutes (with SE-C30)
  LP: 60 minutes (with SE-C30)

4



Press the REC Standby button. The unit enters the Recording Standby mode.

5

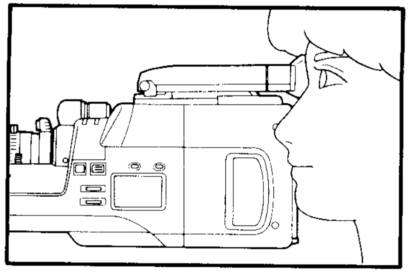


For full-auto operation, press the FULL AUTO button.

For manual override, use the W. BALANCE and FOCUS buttons.

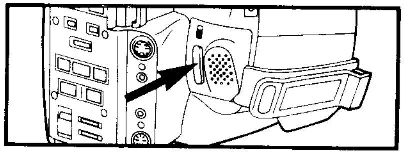
- ●Press the W. BALANCE button so that the required symbol appears on the viewfinder and on the LCD.
  - 💡 : when the subject is illuminated by a halogen or tungsten lamp.
  - ▭ : when the subject is illuminated by a fluorescent lamp.
  - ☀ : when you shoot in the daytime outdoors.
- ●When shooting under fluorescent light, always use the fluorescent light setting in the manual white balance mode for best results.
- ●For manual focus, press the FOCUS button so that MANUAL is shown on the LCD. A focus-aid indicator will appear in the viewfinder. (See page 16.)

6



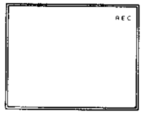
Determine the focus and composition by referring to the viewfinder image. For zooming, see page 21.
For date/time recording, see page 20.

7

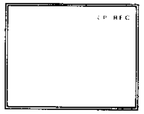


Press the start/stop button.

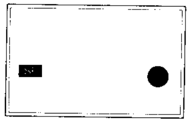
- ●This causes REC or LP REC to appear on the viewfinder screen, showing that recording is actually taking place.
- ●Be careful not to touch any buttons inadvertently during shooting.



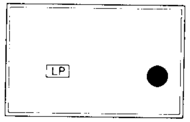
or



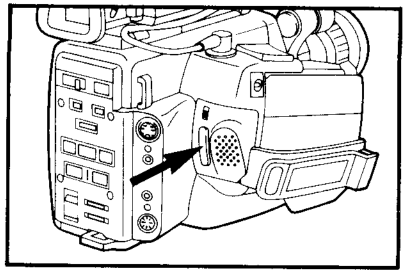
- ●The LCD display shows:



or



8

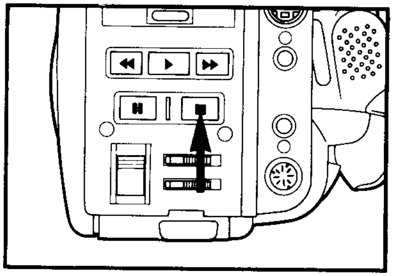


To stop recording temporarily, press the start/stop button once again.

9 To restart recording, press the start/stop button.

- ●For a pause longer than 3 minutes, press the POWER switch to turn power off.
- ●If the Recording Standby mode continues for longer than about 5 minutes, the unit switches itself off automatically. To restart recording, turn the power on. This makes clean assembled recordings possible even after a long pause.

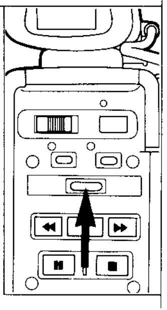
10



To end recording, press the STOP button.

- ●After making sure that the tape has stopped, press the POWER switch to turn power off.

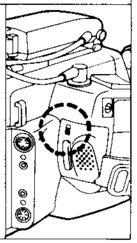
Quick Review function



- If you want to review the end of the last recording for confirmation, press the QUICK REVIEW/EDIT button from the Recording Standby mode; the tape will be rewound for about 2 seconds of programme time and played back automatically for this section, after which it will stop in the Recording Standby mode for the next shot.

Notes:
- The TRACKING control should be at its centre position.
- Distortion might occur when playback starts. This is normal.

Trigger alarm system



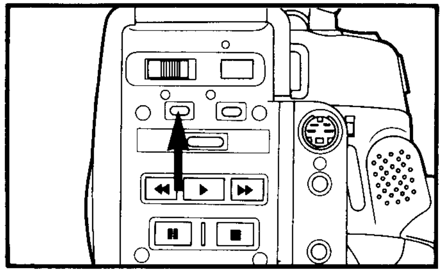
When the ALARM ON/OFF switch is set to ON, an electronic alarm beeps when the Recording start/stop button is pressed to begin recording.
The electronic alarm beeps twice when the Recording start/stop button is pressed for record pause. This alarm helps prevent recording errors.

Elapsed time display

The accumulated recording time (elapsed time) can be displayed on the viewfinder.
1. Set the REC TIME ON/OFF switch to ON. The recording time is displayed on the viewfinder screen.
2. If you wish to reset it to "00:00", press the REC TIME RESET button.

Notes:
- When you wish to disengage the Elapsed Time Display mode, set the REC TIME ON/OFF switch to OFF.
- Unloading the cassette also resets the display to "00:00".

Rehearsal



If you wish to rehearse shooting angles, compose scenes, etc., without actually recording on the tape, press the INSERT/MONITOR button, instead of REC. The aimed-at scene will appear on the viewfinder screen. For full-auto rehearsal, also press the FULL AUTO button. To engage the Recording Standby mode from rehearsal, press the REC button. To disengage the Rehearsal mode, press the STOP button:
- Rehearsal is possible whether a cassette is loaded or not.
- With a cassette loaded, rehearsal is not possible during rewind or fast forward.
- The power save circuit does not function during rehearsal. (For power save function, see page 19.)

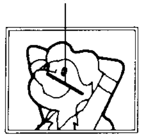
Auto or manual?

- Iris control is always automatic. Therefore, possible combinations of auto and manual functions are as follows:

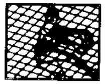
Control / Function	FULL AUTO	W. BALANCE	FOCUS	FOCUS W. BALANCE
White balance	Auto	Manual	Auto	Manual
Focus	Auto	Auto	Manual	Manual
Iris	Auto	Auto	Auto	Auto

- Be careful not to cover the white balance sensor window, otherwise correct white balance will not be obtained in the auto focus mode.
- For high-speed electronic shutter, see page 18.

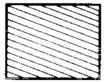
Precautions for auto-focus



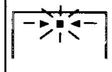
- A small area around the centre of the picture, which varies depending on the zoom and focus conditions, is used to detect focus. (no actual indication provided on the screen.)
- Do not touch the focus ring while the auto-focus mechanism is in operation.
- Be careful not to cover the auto-focus sensor window, otherwise accurate focusing will not be possible.
- When not in use, do not leave the GR-S70E in the Auto-focus mode with power on; otherwise light entering the auto-focus sensor window will operate the auto-focus mechanism, consuming power.
- If the lens and/or auto-focus sensor window are smeared with stains or blurred with condensation, accurate focusing is not possible. Keep them clean. If they become dirty, wipe with a piece of soft cloth. When condensation occurs, dry them by wiping with a soft cloth or wait for conditions in which they become dry.
- Correct focus may not be obtained in the following situations. In such cases manual focusing should be performed to obtain proper focus.



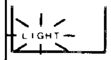
Two subjects at different distances overlap in the same scene.



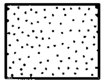
Slanted lines only.



If focus-aid indication is difficult because of low contrast, these focus-aid indicators appear simultaneoulsy and blink.



Low illumination.

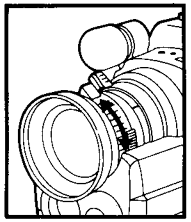


Minute patterns or identical patterns that are regularly repeated.

Caution:
Be careful not to touch any buttons inadvertently during shooting.

Manual focus

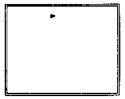
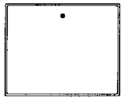
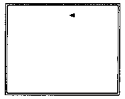
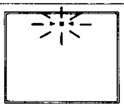
If the manual focus mode is selected, proceed as follows:



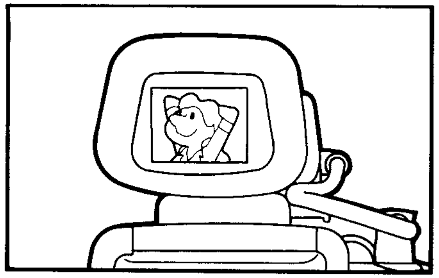
1. Zoom in on a subject by pressing the "T" button.
2. Focus onto it by turning the focus ring. Refer to the focus aid indication chart below.
3. Determine the composition by pressing the "W" button.

Notes:
- When you use the Manual Focus mode, be sure to focus the lens in the maximum telephoto position. If you focus in on a certain subject in the wide-angle position, sharply-focused images cannot be obtained when zoomed up because the depth of field is reduced at longer focal lengths.
- Covering the white balance sensor while manually focusing will result in poor colour reproduction.

Focus Indicators

Condition	Indication	Corrective operation
Focus point behind the subject		Turn the focus ring clockwise until the centre square lights.
Correct focus		Keep the focus ring in the same position.
Focus point in front of the subject		Turn the focus ring counterclockwise until the centre square lights.
Indication not possible because of low contrast		Estimate the subject distance and set the focus ring referring to the distance scale on it.

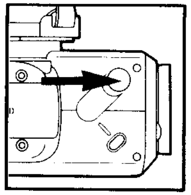
Viewfinder Monitoring



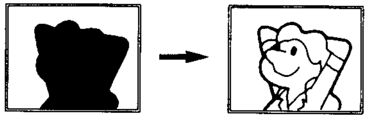
- Rewind the tape to a point from which you want to check the recording.
- Press the PLAY button, and you can view the playback picture on the viewfinder screen.

Notes:
- Pressing the PAUSE/STILL button during playback stops the picture on the viewfinder screen.
- Shuttle search is also possible in both directions.

Backlight compensation



- Press the BLC button. While it is being pressed, the iris is 1 – 2 f-stops wider than that adjusted automatically.
- When excessive lighting is located in back of the subject, correct exposure may not be obtainable. To compensate for this, use BLC.



Without BLC With BLC

Assemble recordings

- Repeating steps 7 and 8 produces assemble recordings.
- If recording is restarted from the Stop mode, a few frames of the previously recorded picture are replaced with a new recording. To avoid this, follow the technique described in "Assemble Recording Technique-2" on page 19.

Multiple-speed electronic shutter

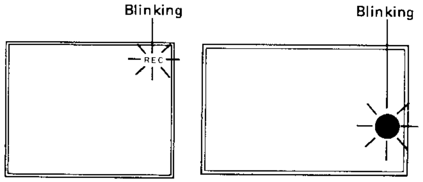
The GR-S70E is equipped with a selectable high-speed shutter that allows better recording of quick movements for sharp, clear stills or slow-motion playback. Select it when taping fast-action shots that you will want to play back later in the Still or Slow-motion mode.

1. Select the shutter speed among 1/1000, 1/500, 1/250 and Standard (1/50)-second by pressing SHUTTER button. This can be done while recording or in any other mode. It continues at the selected speed until switched to another speed. When selected, the High-Speed Shutter mode is indicated on the viewfinder screen and LCD.
2. When finished recording the fast-action scene, switch back to the standard shutter speed by pressing the SHUTTER button until STD appears on the LCD.

Notes:
- The High-Speed Shutter mode requires slightly more subject illumination than the Standard Shutter mode. Therefore, the low-light warning may blink in the viewfinder. If so, switch to the Standard Shutter mode.
- Picture colour may be adversely affected in the High-Speed Shutter mode when the subject is lit by alternating discharge-type light sources such as fluorescent or mercury-vapour lights.
- When playing back a section recorded in the High-Speed Shutter mode, movement of subjects in the picture may not be smooth. This is not due to any defect of the unit.
- Pressing the FULL AUTO button also restores the shutter speed to the standard level.

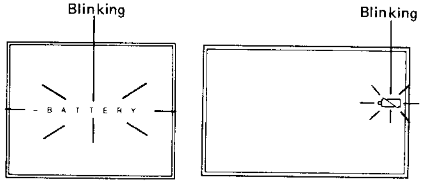
Warnings

Tape-end warning



- The recording indicator blinks on the viewfinder screen and the LCD a few minutes before the end of the tape.
- When the end of the tape is reached during recording, the Stop mode engages automatically.

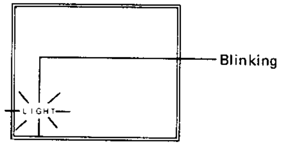
Battery warning



Viewfinder LCD display

- When the battery power is coming to an end, a battery warning indication appears in both the viewfinder and the LCD. Replace the battery pack with a fully charged one.
- After these indications appear, the power turns off automatically. In this state, however, pressing the POWER switch while holding EJECT button pressed turns the power on and ejects the cassette.

Low-light warning



- If the blinking "LIGHT" indicator appears on the viewfinder screen, the amount of light is insufficient. Increase the lighting.

POWER SAVE AND TAPE PROTECTION CIRCUIT

- To save better power, the GR-S70E (when battery-operated) switches itself off automatically in the following situations:
  (1) When left for longer than 5 minutes in the Stop mode.
  (2) When left for longer than 5 minutes in the Recording Standby (Record-Pause) mode.
- To protect the tape, the GR-S70E (regardless of whether battery-operated or AC-powered) releases tape tension slightly and switches itself off automatically if left for longer than 5 minutes in the Recording Standby (Record-Pause) mode.
- For the same reason, the GR-S70E enters the Stop mode if left for longer than 5 minutes in the Still (Play-Pause) mode.

Battery operation

STOP → POWER OFF
5 minutes

Battery/AC operation

RECORD PAUSE → POWER OFF
5 minutes

PLAY PAUSE (STILL) → STOP → POWER OFF
5 minutes

ASSEMBLE RECORDING TECHNIQUE — 1 (To replace the battery pack during recording)

1 If the battery warning appears in the viewfinder or the LCD while recording, stop recording by setting the POWER switch to OFF, not the STOP button.

2 Replace the battery pack with a charged one.

3 Set the POWER switch to turn power on.
- The unit will be in the Recording Standby mode.

4 Press the recording start/stop button to start recording.

ASSEMBLE RECORDING TECHNIQUE — 2 (To search for the assemble point with the "Retake" function)

After reviewing a recorded segment, you may decide to re-record it immediately. The Retake function is convenient for this.

1 Make sure the camera is in the Recording Standby mode. (If not, engage the mode.)

2 Press the RETAKE button to reach the point where you wish a new recording to start. When the RETAKE button is released, the camera will enter the Recording Standby mode again.

3 Press the start/stop button to start recording.

ASSEMBLE RECORDING TECHNIQUE — 3 (To record onto a partially recorded tape)

1 Play back the tape to a point where you wish a new recording to start.
- Use the SHUTTLE SEARCH button for faster location.

2 Press the PAUSE/STILL button at the located point.
- The unit will enter the Still mode.

3 Press the REC button.
- The unit will enter the Recording Standby mode.

4 Press the recording start/stop button to start recording.

RECORDING THE DATE/TIME

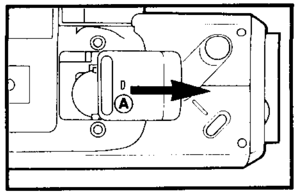
Warning on lithium battery
- **Dispose of used battery promptly.**
- **Keep away from children.**
- **Do not dissasemble and do not dispose of in fire.**

Battery insertion

- Switch off the unit's power before inserting the battery.

This battery powers the date/time function.

1. Slide the cover off the CLOCK battery compartment on the bottom of the VideoMovie by pressing lightly on the section labelled Ⓐ in the diagram.
2. Insert the provided lithium battery **with the plus (+) side up.**
3. Slide the cover on the unit until it clicks.

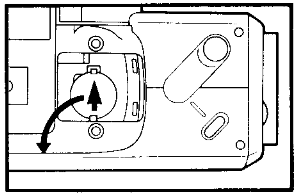


Battery replacement

- Switch off the unit's power before removing old battery.

The battery lasts for about one year. When the lithium battery warning (▶E) appears in the viewfinder, this battery needs to be replaced. Obtain a new CR 2025 lithium battery and perform the following procedure.

1. Remove the battery by pressing the knob in the direction of the arrow.
2. Insert the new CR 2025 **with the plus (+) side up.**
3. Slide the cover back until it clicks.



Note:

- Replace battery with Panasonic (Matsushita type) CR 2025 only. Use of another battery may present risk of fire and explosion.

Date/time setting

Before adjusting the date and time for the first time or after replacing the batteries, 1.1.89 blinks in the viewfinder, indicating the clock needs to be set.

① Switch the unit's power on, 1.1.89 will blink in the viewfinder. Press INSERT/MONITOR button to enter rehearsal mode.
② Press the DATE/TIME SELECT button – the year blinks.
③ Press the DATE/TIME SET button to choose the correct number.
④ Press the DATE/TIME SELECT button to select the next item to change, with the item selected changing in the following sequence:

Year → Month → Day → Hour → Minute → Finish Adjustment → Year

⑤ Repeat steps ② and ③ to set all items. After the minute setting has been performed, press the DATE/TIME SELECT button, and items will cease blinking, and the clock will resume normal function. For the auto date record mode, the auto date record reserve indicator will appear.

Date/time recording

The date, time, or date and time can be displayed and recorded according to the selected mode. Press the DATE/TIME MODE button to cycle through the modes in the following order:

→ **Auto date record reserve → Date display → Date/time display → Time display** →

Date/time recording indications

- When the auto-date-record function is selected, "-.-.-" appears in the viewfinder until recording begins. As long as this function is chosen, the date will be automatically displayed and recorded for about 5 seconds following the first operation of the recording start/stop button after the power is turned on.
- Auto date record reserve indication will cease to be displayed, if the DATE/TIME ON/OFF button is set to OFF unless power is reapplied.

Auto date record		**Date display**	**Date/time display**	**Time display**
— . — . — Auto date record reserve	1. 1.90 Auto date record executed	1. 1.90	1. 1.90 23 : 59	23 : 59

SPECIAL TECHNIQUES

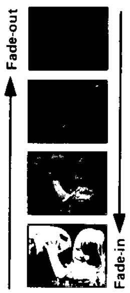
Fade-in/out

The GR-S70E is equipped with an automatic fade mechanism for allowing smooth fade-in and fade-out with a black-coloured blank screen. Audio also fades in sync with video.

Automatic fade-in

1 Determine the composition in the Recording Standby mode and press the FADER button to reserve the fade-in mode.

2 Press the start/stop button. The screen will quickly become black and recording begins. When the start/stop button is released, fade-in will start. It will be completed in about 5 seconds. If the start/stop button is not released when pressed, the black picture will remain on the screen and be recorded.



Automatic fade-out

1 Start shooting as usual.

2 Press the FADER button to reserve the fade-out mode.

3 Press the start/stop button. Fade-out will start and be completed in about 5 seconds. When completed, Recording Standby mode is entered. If the start/stop button is not released when pressed, the final black picture remains on the screen and continues to be recorded, until the button is released.

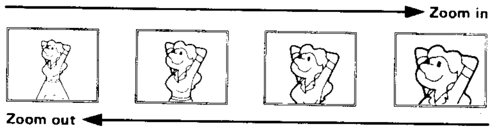
- FADER is displayed in the viewfinder when fading is reserved, and continues to be displayed until fading in or out is completed.

Zooming

When the focal length of the lens is varied by turning the zoom ring, the image appears to come nearer to or retreat from the viewer.

Power zooming

Press "T" for zooming in and "W" for zooming out. Two zooming speeds are available. For slow-speed zooming, press lightly. For regular-speed zooming, press firmly.



Manaul zooming

Rotate the zoom lever downwards for zooming in and upwards for zooming out.

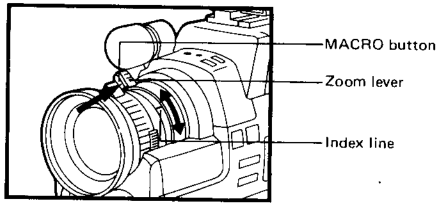
Macro shot

Normally, focusing is possible only for subjects that are more than 1.1 m away from the camera. By setting the lens to the Macro mode, it is possible to manually focus in on any subject located inside that limit, right up to the front of the lens. The MACRO and ZOOM ranges combined give continuous shooting ability from close-up to infinity.

1 First engage the Manual Focus mode. While pressing in the macro button, turn the zoom lever in the direction of the arrow until the number "8.5" on the zoom ring passes the index line.

2 Focus by turning the zoom lever slowly.

3 To release the Macro mode, turn the zoom lever back, in the opposite direction from step 1 above, until the number "8.5" passes the index line.



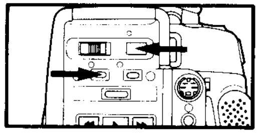
- Use the zoom lever to focus in the MACRO range.
- Turning the zoom ring will slightly alter the angle of view of the lens.
- It is advisable to increase illumination when shooting in macro for best results.
- The auto-focus mechanism does not function during macro shooting.

DIGITAL SUPERIMPOSE

The GR-S70E's Digital Superimpose function allows 3 titles to be superimposed on a recording in a choice of 8 colours and either positive or negative (reversed) styles for more creative video opportunity.

Storing Titles

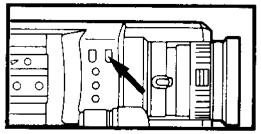
1



Put the unit into the REC PAUSE or REHEARSAL mode.

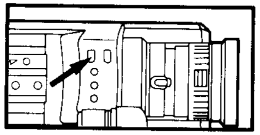
- When the "E" indication (lithium battery warning) appears in the viewfinder, titles cannot be stored. Insert the lithium battery, or replace the inserted one with a new one according to the instructions on page 20.

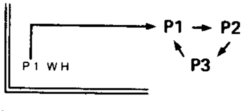
2



Press the TITLE ON/OFF button.

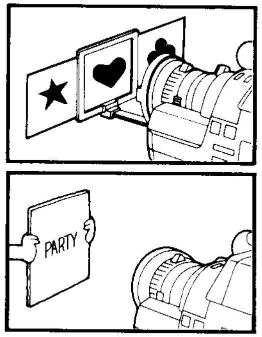
3





Use the TITLE PAGE button to select the page of memory in which you want your title to be stored. The page number will appear on the viewfinder screen.

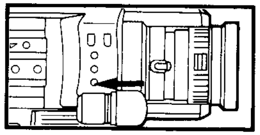
4



Aim the unit at your title in as well-lit a location as possible. You may also use the provided Title Easel for this purpose. Shoot in the MACRO mode when using the Title Easel.

- If, at this point, the stripes or an old title appearing in the viewfinder prove bothersome, press the TITLE ON/OFF button to turn it off.
- When storing a title, the scene visible in the viewfinder may differ slightly from that which will be recorded on the tape.

5



Press the TITLE MEMORY button for about 1 second to store the title.

- When a title is stored poorly, check to see that the lighting is adequate and that the title is drawn with bold strokes, then shoot the title again.
- Every time the TITLE MEMORY button is pressed, the previously recorded title stored in that page of memory will be erased, and replaced with the new title.

- The page selection can be changed when the TITLE ON/OFF button is ON.
- When a page of memory contains nothing, it is "empty", and a pattern of stripes will appear in the viewfinder.
- When the power is turned off or the unit is put into the Stop mode, the PAGE mode returns to the page 1 position.

Creating Titles

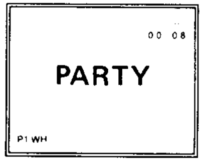
Make note of the following guidelines to assure best results.

1. Create titles using dark colours on light backgrounds — black writing on white paper, for example.
2. Letters should be drawn with broad strokes.

6 Press the COLOR button to select the colour in which you want your title to appear.

The colours will cycle in the following order:

BK → **WH** → **YL**
(Black) (White) (Yellow)
↑ ↓
BL **CY**
(Blue) (Cyan blue)
↑ ↓
RD ← **MG** ← **GR**
(Red) (Magenta) (Green)



7 Press the IMAGE REVERSE button to choose negative or positive style.

To store additional titles, in digital memory pages 2-3, repeat steps 3-7 above.

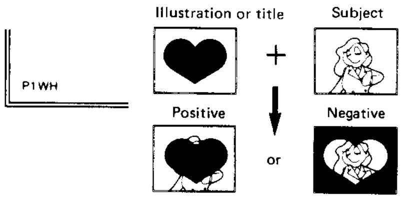
- The TITLE MEMORY button works in both the Rec Pause and Rehearsal modes; care should be exercised not to press TITLE MEMORY accidently as this will erase stored titles.

Making a title at the beginning of a recording

1 Put the unit into the REC PAUSE mode.

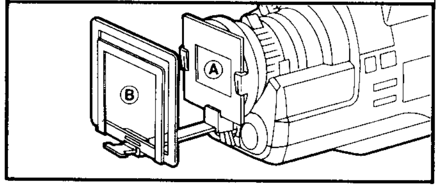
2 Press the TITLE ON/OFF button to display your title on the viewfinder screen.

3 Press the TITLE PAGE button until the title you wish to use is displayed. The pages will cycle from 1 to 3. Confirm the page, the colour, and the neg/pos style. Colour choice and neg/pos style can be changed at this point. Press the COLOR button to select a different colour, and the IMAGE REVERSE button to choose neg/pos style.



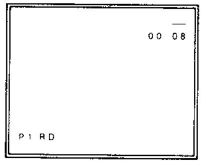
4 Press the unit's trigger to begin recording. The title will now be mixed with what you are recording.
Press the TITLE ON/OFF button when you wish to end the titled portion of your recording.

A photographic slide can be recorded by inserting it in Ⓐ and inserting a blank white card in Ⓑ of the provided title easel. Slides up to 1/8" thick can be used. Illuminate Ⓑ from behind for best results.



Inserting a title in the middle of a recording

1 Confirm the page, colour, and neg/pos style of your title.
Press the TITLE ON/OFF button to turn it off.



2 Shoot your live scene by pressing the VideoMovie's start/stop trigger.
Press the TITLE ON/OFF button when you wish to insert your title. It will be inserted into your ongoing recording at exactly that point.

3 Press the TITLE ON/OFF button again to stop inserting your title with the action you are recording.

Notes:
- Colour choice, page number, and IMAGE REVERSE selections can be changed when the title is displayed in the viewfinder.
- The "Colour" and "Page number" indications displayed in the viewfinder will not be recorded on the tape.
- When an "empty" page is called from memory, a pattern of stripes will appear in the viewfinder.
- When the lithium battery for the unit's clock is exhausted, stored titles may be lost. For best results, replace the lithium battery before its one year required replacement date. When the lithium battery warning appears in the viewfinder, as long as power is still supplied to the unit by the main battery pack, or from an AC source (even if the unit's power switch is off), the digital memory will be retained, however, the lithium battery should be replaced at this time.

PLAYBACK

The GR-S70E permits playback of recorded S-VHS-C or VHS-C video cassettes.
For connections refer to pages 25, 26 and 27.

Preparations
- With a television equipped with audio/video input connectors, set the television's TV/VIDEO switch to VIDEO.
- With a regular television receiver, set the aerial select switch of the RF-V3E RF unit to VIDEO and the TV receiver's channel selector to your video channel (specified AV channel).

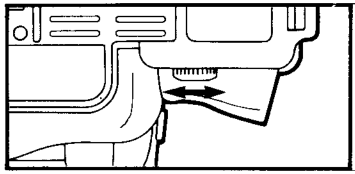
1 Supply power.
(Battery or AC operation: see page 10.

2 Press the POWER switch to turn power on.

3 Insert a pre-recorded cassette and press the PLAY button. Playback will start.

Ensure that tape is not slack inside the cassette, then load the cassette correctly. See page 3.

4 Press the PLAY button. Playback will start.
- The SP/LP switch may be in either position. The SP or LP mode recording is automatically detected and played back at a correct speed respectively.



Tracking adjustment
If noise bars appear on the screen, adjust the TRACKING control. Turn it slowly in either direction to minimise noise bars. After playing a particular tape, return the TRACKING control to the centre position.

Shuttle Search

Fast-speed playback in the forward direction

Press the FF button in the Play mode. Playback will be speeded up to 3 times normal speed, in SP mode, 7 times normal speed in LP mode, as long as the button is being pressed.

Fast-speed reverse playback

Press the REW button in the play mode. The tape will be played back in the reverse direction at 3 times normal speed in SP mode, 7 times normal speed in LP mode, as long as the button is being pressed.

Still playback

Press the PAUSE/STILL button during playback. The picture will stop on the screen.
- After about 5 minutes of still playback, the unit enters the Stop mode automatically, for tape protection, and switches itself off.

Notes:
- For brief scanning, keep the Shuttle Search button pressed for more than 2 seconds; when you release the button, the Search mode will be cancelled.
- Noise bars will appear and pictures may become monochrome while in these modes. This is not due to any defect of the unit.

Counter Memory Function

The GR-S70E incorporates a counter memory mechanism which facilitates locating a specific tape segment.

1 Press the RESET button to reset the counter to "0".

2 Press the MEMORY button. The "M" mark will appear.

3 After recording or playback, press the STOP button, then the REW button. The tape will automatically stop at the counter reading of around "0".

4 Press the PLAY button to start playback.

Notes:
- The counter memory function is effective in the Fast Forward mode as well.
- To cancel the memory function, press the MEMORY button.
- When the power supply unit is disconnected, all indications on the LCD disappear and the counter memory function is instantly cancelled.

CONNECTION TO A TELEVISION FOR PLAYBACK

① Connection to a television not equipped with A/V input connectors

For this situation, use the optional RF-V3E RF unit.

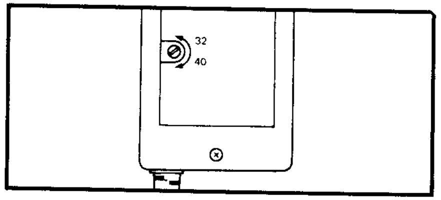
1 Remove the aerial cable from the TV receiver.

2 Connect the aerial cable to the ANTENNA IN terminal of the RF unit.

3 Connect the RF OUT terminal of the RF unit to the aerial terminal of the TV receiver using the provided aerial cable.

4 Connect the VIDEO/AUDIO INPUT cable of the RF unit to the AV OUT connector of the GR-S70E.

5 Adjust the RF converter output channel according to your VIDEO CHANNEL.

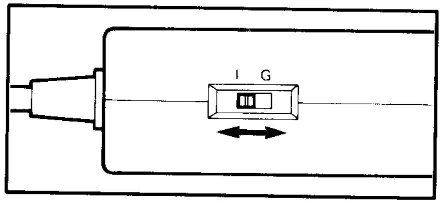


• RF converter channel adjustment screw

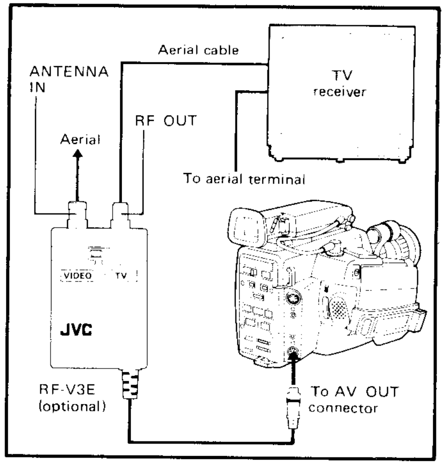
The RF unit permits playback of video and audio recordings through a TV receiver. The signals from the RF unit are viewed through a vacant channel not used for broadcasting in your area. The output frequency of the RF converter has been set to correspond to a broadcast on UHF channel 36. To view playback pictures from the GR-S70E with your TV receiver, tune its specified AV channel to UHF channel 36. If channel 36 is employed for broadcasting in your area, readjust the RF converter output channel to one of the vacant channels between 32 and 40. To make this adjustment, remove the small cap on the back of the RF unit and turn the adjustment screw with a screwdriver to tune in a vacant channel.

• TV system select switch (I/G)

When you use a TV receiver built on the British PAL standard, shift the system select switch to "I".



PRECAUTIONS FOR RF-V3E (optional)
- For exclusive use with the VideoMovie.
- Do not disassemble or remodel the RF-V3E.
- Do not expose it to strong shocks.
- Unplug the connected equipment during lightning storms. (Never touch the aerial cable.)



• RF converter channel adjusting procedure
1. Set the AV channel of the TV receiver to one of the vacant channels.
2. Set the VIDEO OUT select switch to "CVBS".
3. Power the GR-S70E.
4. Put the GR-S70E in the Rehearsal mode (see page 15).
5. Set the VIDEO/TV switch of the RF unit to VIDEO.
6. While monitoring the output signal on the TV screen, turn the RF converter channel adjustment screw so that the monitored picture comes in most clearly.

CAUTION:
To view the GR-S70E recordings with a TV receiver, use a TV receiver having a specified AV channel and employ this AV channel as your VIDEO CHANNEL, otherwise playback may be disturbed with vibrating or bending pictures. AV channels refer to channels exclusively for video playback; because AFC circuits are applied to these channels, the playback pictures can be stabilised. Recent TV receivers have one or more AV channels.

OPERATION

• Viewing video cassettes being played back with the GR-S70E

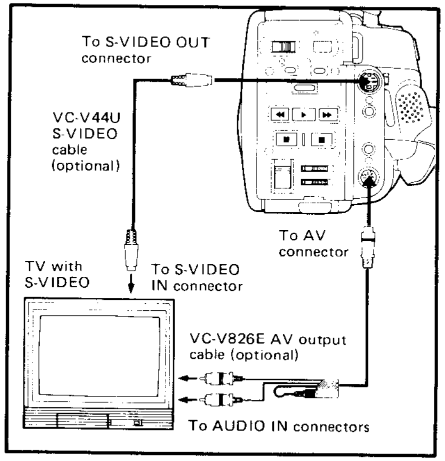
To view video cassettes or to monitor the recording, set the VIDEO/TV switch of the RF unit to VIDEO and the TV channel selector to the channel corresponding to the RF output channel.

• Viewing television programmes

Set the VIDEO/TV switch to TV, and the TV receiver will function as usual.

② Connection to a television equipped with S-VIDEO input connector or Y/C-compatible 21-pin input connector

For this situation, use the S-VIDEO cable and the AV output cable.



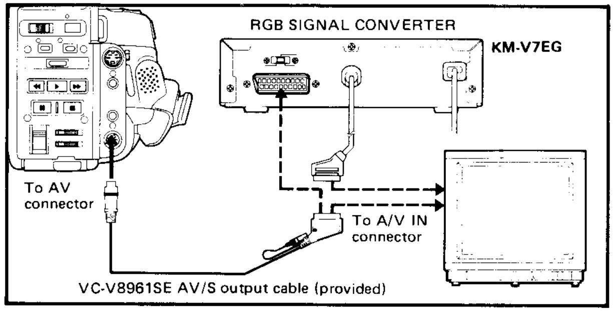
Procedure

A. With 4-pin S-VIDEO input connector
1. Connect the S-VIDEO OUT connector of the GR-S70E to the 4-pin S-VIDEO IN connector of the TV.
2. Connect the AV connector of the GR-S70E to AUDIO IN connectors of the TV. Or, connect the AV connector of the GR-S70E to the AV input connector (21-pin) of the TV with the provided AV/S output cable.
3. Set the VIDEO OUT select switch to "Y/C".

B. With Y/C-compatible 21-pin AV input connector
1. Connect the AV connector of the GR-S70E to the Y/C-compatible 21-pin AV input connector of the TV.
2. Set the VIDEO OUT select switch to "Y/C".

③ Connection to a television equipped with regular A/V input connectors

- Simply connect the AV connector of the GR-S70E either directly to the A/V IN connector of the television using the provided AV/S output cable, or to a KM-V7EG RGB signal converter (optional) and the RGB signal converter to the RGB-compatible A/V IN connector of the television.
- Set the VIDEO OUT select switch as required: either to "CVBS" (with the direct TV connection) or to "Y/C" (with the RGB converter connection).


RGB SIGNAL CONVERTER
KM-V7EG
To AV connector
To A/V IN connector
VC-V8961SE AV/S output cable (provided)

Notes:

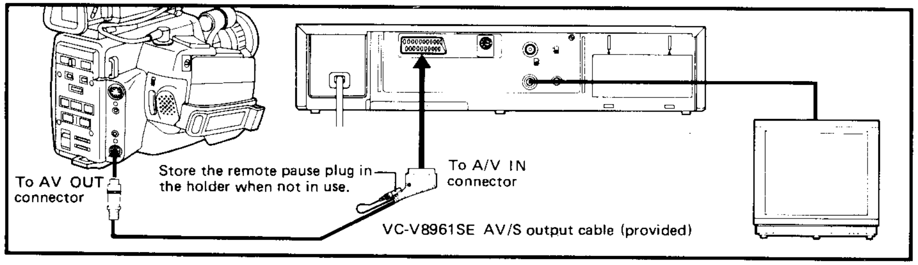
- The KM-V7EG (optional) enables the separated Y/C signals to be converted into RGB signals so the superb quality of Super VHS pictures is available.
- When a "CVBS" signal is input to the KM-V7EG, it is output as a "CBVS" signal from the KM-V7EG.

TAPE DUBBING OR EDITING

Dubbing onto a standard recorder

Connection

1. Set the DUBBING ON/OFF switch to ON.
2. Connect the AV OUT connector of the GR-S70E to the A/V IN connector of the video recorder using the provided AV/S output cable VC-V8961SE.
3. Connect a television to the video recorder to monitor the picture while dubbing.


To AV OUT connector
Store the remote pause plug in the holder when not in use.
To A/V IN connector
VC-V8961SE AV/S output cable (provided)

Operation

- Put the GR-S70E in the Play mode and the connected recorder in the Record mode to copy the recording. To edit out unwanted material, press the recorder's PAUSE/STILL button.

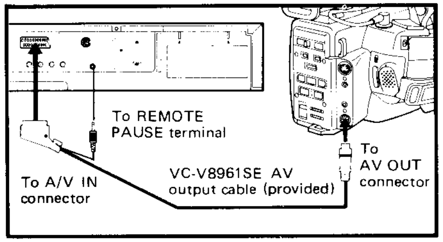
There are some VCRs which are not compatible with Master Edit Control. For these units, use the VCR's pause control to perform edit-in or edit-out functions.

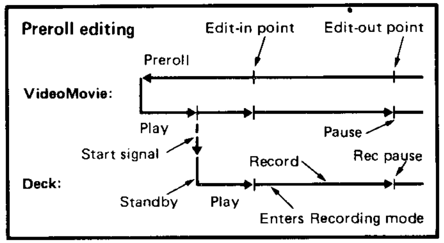
Using The Master Edit Control System

This function is available when using **designated** JVC video decks equipped with a remote pause terminal. The Master Edit Control system allows control of the connected deck using the VideoMovie's controls, preroll editing for edits free of transition-point gaps and distortion.

Connection

1. Set the DUBBING ON/OFF switch to ON.
2. Connect the AV OUT connector of the GR-S70E to the A/V IN connector and remote pause terminal of the video recorder.
3. Connect a television to the video recorder to monitor the picture while dubbing.


To REMOTE PAUSE terminal
To AV OUT connector
VC-V8961SE AV output cable (provided)
To A/V IN connector


Preroll editing
Edit-in point
Edit-out point
Preroll
VideoMovie:
Play
Pause
Start signal
Record
Rec pause
Deck:
Standby
Play
Enters Recording mode

Operation

Dubbing can be initiated from Stop mode or Still mode.

- **For dubbing a tape**

1. Switch on the VideoMovie's power.
2. Switch on the deck's power.
3. Put the deck in the Record-Pause mode.
4. Press the QUICK REVIEW/EDIT button to start editing. The tape is loaded, then dubbing starts.
5. Tape stops when the PAUSE/STILL or STOP button of the GR-S70E is pressed or counter reaches "M, 0".
6. Deck stops recording and enters the Record-Pause mode.

- **For editing**

1. Switch on the VideoMovie's power.
2. Turn on the deck's power.
3. Put the deck in the Record-pause mode.
4. Locate the edit-in point via play, fast-forward, rewind, or Shuttle Search, and press the PAUSE/STILL button.
5. Press the QUICK REVIEW/EDIT button to start editing.
6. Tape stops when the PAUSE/STILL or STOP button of the GR-S70E is pressed or counter reaches "M, 0".
7. Deck stops recording and enters the Record-Pause mode.

Note:

When the QUICK REVIEW/EDIT button is pressed from the Still mode, the tape is rewound for 5 seconds of programme time. The Pause/Still indicator blinks on the LCD to indicate rewinding is taking place. After prerolling, first the prerolled section is played back for stabilizing tape run. During playback of the GR-S70E, it gives a start signal to the deck standing by in the Record-Pause mode to start playback and then to enter the Recording mode at the edit-in point, while to GR-S70E continues playback. The Master Edit Control indicator appears on the LCD during dubbing.

Setting the edit-out point using counter memory

In the above procedures, counter memory can be used to set the edit-out point before editing takes place, so that the VideoMovie automatically stops playback at the designated point. If the edit-out point is to be set in this way, do so following step 3 of the dubbing operation.

1. Locate the desired edit-out point on the VideoMovie's tape.
2. Press the VideoMovie's PAUSE/STILL button.
3. Reset the VideoMovie's counter to "0".
4. Press the VideoMovie's counter MEMORY button.
5. The VideoMovie enters the Pause mode, and the deck enters the Record-Pause mode.

Note:

When the tape reaches the preset edit-out point during the dubbing operation, it may stop slightly before or after the designated point on the tape.

INSERT EDITING

Insert editing means recording a new scene into a section of prerecorded tape so that a part of the original recording can be replaced with a new sequence without excessive picture distortion at the edit-in and edit-out points. In the Insert Edit mode, the original audio on the normal audio track remains unchanged.

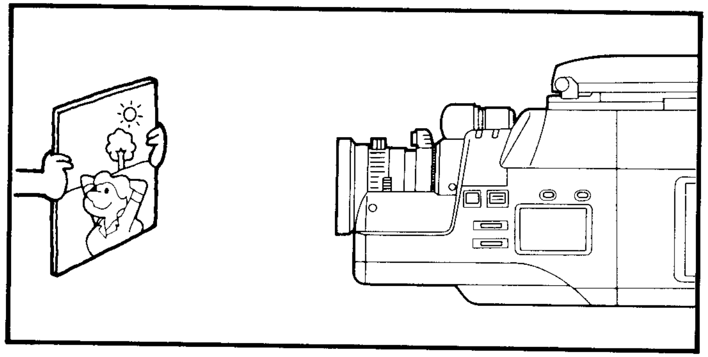
Preparation

- ●Connect the GR-S70E and the video sources according to the diagram.
- ●Turn on the power of the GR-S70E and connected component.
- ●Correctly insert the appropriate cassette into the GR-S70E.

1. Locate the desired edit-out point on the VideoMovie's tape and press PAUSE/STILL.
2. Press RESET to obtain a "0" reading, then press MEMORY to obtain an "M" indication on the LCD.
3. Press REW/SHUTTLE SEARCH to rewind the tape a little beyond the beginning of the scene your wish to insert.
4. Press PAUSE/STILL exactly at the beginning of the scene you wish to insert.
5. While holding INSERT/MONITOR pressed, press PAUSE/STILL. The INSERT indicator lights and the VideoMovie enters the Insert Edit mode with the scene at which the VideoMovie is aimed appearing on the screen for monitoring.
6. Press Recording start/stop to insert the new sequence.
7. When the counter reading of "0" is reached, insert editing stops automatically and the VideoMovie enters the Playback mode.

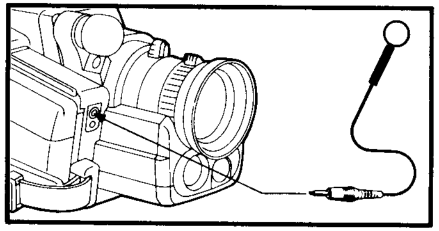
Notes:

- ●When the tape reaches the preset edit-out point during the editing operation, it may stop slightly before or after the designated point on the tape.
- ●Only video signals are recorded in the Insert Editing mode. When the sound is to be recorded, press the AUDIO DUB and PAUSE/STILL buttons simultaneously in the Insert Pause mode. When INSERT/MONITOR and PAUSE/STILL buttons are pressed simultaneously again, the unit reenters the video-signal-only recording mode.



AUDIO DUBBING

Audio dubbing means recording a new soundtrack on a pre-recorded tape, i.e., replacing the original sound with new audio material.



Precautions

- ●Tapes with their safety tabs removed cannot be audio dubbed. Reseal the safety tab slot to perform the dubbing.
- ●If whistling or howling is heard during audio dubbing, reduce the TV volume or move the mike farther away from the TV.
- ●When dubbing from a microphone
  Connect the microphone to the VideoMovie as shown on the left.

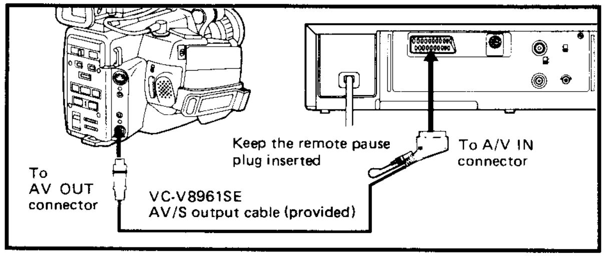
1. Locate the desired edit-out point on the VideoMovie's tape and press PAUSE/STILL.
2. Press RESET to obtain a "0" reading, then press MEMORY to obtain an "M" indication on the LCD.
3. Press REW/SHUTTLE SEARCH to locate more quickly the place on the tape you want audio dubbing to begin.
4. Press PAUSE/STILL at the exact beginning point for audio dubbing.
5. While pressing AUDIO DUB, press PAUSE/STILL to enter the Audio Dub Standby mode.
6. When you are ready with the new audio material, press PLAY to begin audio dubbing.
7. When the counter reading of "0" is reached, audio dubbing stops automatically and the VideoMovie enters the playback mode.

USING THE GR-S70E AS A VIDEO CAMERA

For continuous documentation of longer events, the GR-S70E can be used as an independent video camera in combination with either a deck-type or portable video recorder.

Using a recorder not equipped with a remote pause terminal

- Connect the AV OUT connector of the GR-S70E to the A/V IN connector of the video recorder using the provided AV/S output cable VC-V8961SE.


Keep the remote pause plug inserted
To A/V IN connector
To AV OUT connector
VC-V8961SE
AV/S output cable (provided)

Operation

1. Press the INSERT/MONITOR button. The camera output signal is now available via the AV output cable.
2. Put the connected recorder in the Record mode. Recording will start. Tape start/stop should be controlled with the recorder's buttons.

Note:

- In this configuration, it is possible to obtain a continuous recording and an edited-out recording of the same event simultaneously, because the GR-S70E's start/stop button only controls the tape inside itself while another tape loaded in the connected recorder continues running. To record on the GR-S70E's tape, follow the same recording procedure as described before: press REC Standby and then the start/stop button.

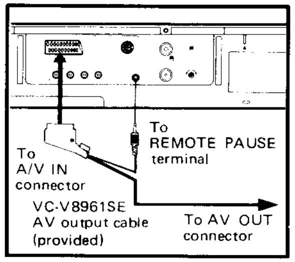
Using a recorder equipped with a remote pause terminal or with a 10-pin camera connector

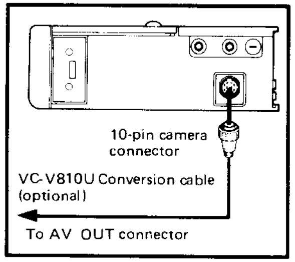
For a recorder with a remote pause terminal

- Connect the AV OUT connector of the GR-S70E to the A/V IN connector and remote pause terminal of the video recorder using the provided AV/S output cable VC-V8961SE.

For a recorder with a 10-pin camera connector

- Connect the AV OUT connector of the GR-S70E to the 10-pin camera connector of the second recorder using the optional VC-V810U conversion cable.





Operation

1. Press the INSERT/MONITOR button.
2. Set the connected recorder in the Recording Standby (Record-Pause) mode.
3. Press the start/stop button of the GR-S70E to start recording.

Note:

- To record on the GR-S70E's tape as well, press the REC standby button and then the start/stop button.

Precautions

- Power is not supplied to the GR-S70E from the connected VCR. Independent power supply is required for both the GR-S70E and the VCR.
- If you stop recording by pressing the GR-S70E's start/stop button, the connected VCR also stops in the Pause mode. However, the pause command signal is not delivered to the connected VCR in the following cases and, therefore, the VCR will start automatically:
  (1) when the GR-S70E is switched off or its battery becomes discharged.
  (2) when the VC-V810U cable is disconnected.

Therefore, before replacing the battery or tape for the GR-S70E put the connected VCR either in the STOP or REC LOCK mode.

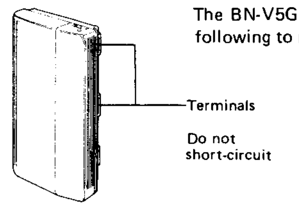
CHARGING THE BATTERY PACK

To charge the battery pack, use the exclusive AC power adapter/battery charger AA-V6EG (provided/optional) or car battery charger BH-V5E (optional).

Note:

The AA-V6EG AC power adapter/battery charger will accept 110 V to 240 V power supplies. Selection is automatic and no adjustment is required.

A WORD ON THE EXCLUSIVE BN-V5GU/V6GU/V7GU BATTERY PACKS



The BN-V5GU/V6GU/V7GU are nickel-cadmium batteries. Give attention to the following to make the most of their characteristics.

Temperature ranges-

The recharging time is based on room temperature of 20°C. The lower the temperature, the longer the recharging time.

For charging: 10°C to 35°C
For operating: 0°C to 40°C
For storing: -10°C to 30°C

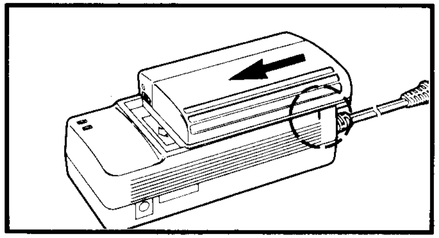
The battery pack has been kept in the uncharged state for shipment. Therefore, before use, charge it.
BE SURE TO CAREFULLY READ THE CAUTION ATTACHED TO THE BATTERY PACK.

Charging procedure

Charging time

BN-V5GU 50 min.	BN-V6GU 70 min.
BN-V7GU 80 min.	

- The charging time differs depending on the ambient temperature and the condition of the battery pack.



1 Connect the AC power cord to a wall outlet (The POWER indicator will light.)

2 Align the marks on the battery pack and adapter.

3 Slide the battery pack in the direction of the arrow until it locks in place.

4 When charging is completed, the CHARGE indicator that is red turns green.

PRECAUTIONS

- If used near a radio, the provided AA-V6EG AC power adapter/battery charger may interfere with reception.
- Prevent inflammables, water and metallic objects from entering the unit.
- Do not disassemble or modify the unit.
- Do not apply shocks to the unit.
- Do not subject the unit to direct sunlight.
- Avoid using the unit in extremely hot or humid places.
- Avoid using the unit in places subject to vibrations.

Note:
The optional BH-V5E Car Battery Charger can charge the batteries from a car battery. For details refer to the instructions of the BH-V5E.

Recording time for the GR-S70E

BN-V5GU 20 min.	BN-V6GU 50 min.
BN-V7GU 75 min.	

- The recording time per charge is influenced by the duration of recording standby, frequency of zooming, etc. It is safer to have spare battery packs.

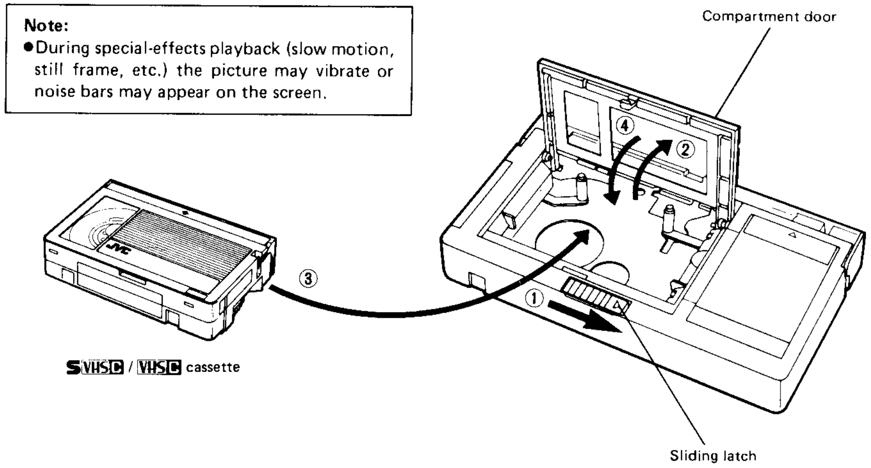
USING THE CASSETTE ADAPTER (provided)

By using the provided Cassette Adapter, an S-VHS or a VHS compact video cassette recorded with this Video-Movie can be played back with any deck-type S-VHS video recorder (deck-type VHS video recorders can play back only cassettes recorded in VHS). Also, either an S-VHS or a VHS compact video cassette installed in the cassette adapter is fully compatible for both recording and playback on any deck-type S-VHS or VHS video recorder.

Note: Only compact video cassette tapes marked S-VHS C or VHS C can be used with the Cassette Adapter.

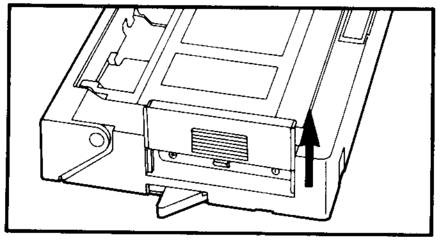
- **C-P6U Cassette Adapter**
  The battery-operated C-P6U performs tape loading and unloading automatically.

Note:
- During special-effects playback (slow motion, still frame, etc.) the picture may vibrate or noise bars may appear on the screen.



Inserting the battery into the cassette adapter

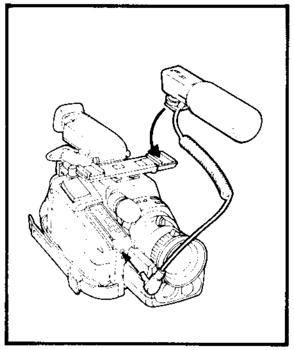
Remove the battery cover by sliding it up.
Install one "R6" battery and reattach the cover.



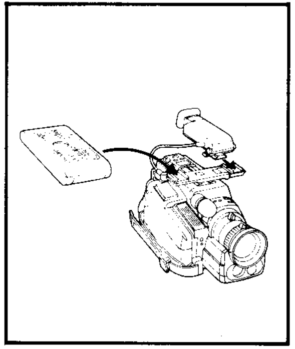
General Battery Precautions
- When the unit is not functioning even when correctly operated, the battery is exhausted. Replace it with a fresh R6 battery.
- Use only R6-size batteries in the unit. Please make note of the following rules for battery use. When misused, batteries can leak or explode.
  1. Insert the batteries correctly according to the diagram inside the battery section.
  2. Do not use old and new batteries together.
  3. Do not use two different kinds of batteries. Although sizes may be the same, voltages may differ.
  4. Do not expose batteries to excessive heat as they can leak, or explode. Do not dispose of batteries in a fire.
  5. Remove batteries from the unit if it is to be stored for an extended period to avoid battery leakage which can cause malfunctions.

SHOE ADAPTER (optional)/ CARRYING HANDLE (optional)

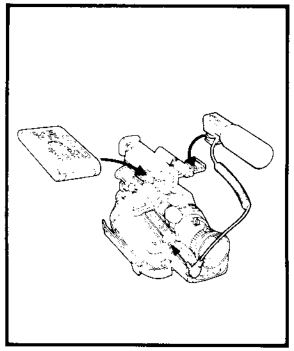
Attaching external microphone using shoe adapter.



Attaching character generator using shoe adapter.



Attaching character generator and external microphone using shoe adapter and carrying handle.



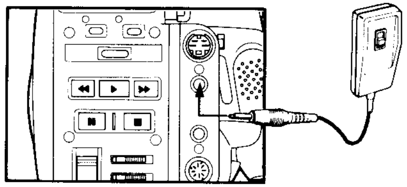
CAUTION
- Do not attach a video light, its heat could cause malfunctioning of the GR-S70E.

Notes:
- Do not adjust the viewfinder angle while using shoe adapter.
- Keep carrying handle in up position while attaching accessories.
- Run the microphone cord behind the shoe adapter.

REMOTE CONTROL UNIT RM-P1U (optional)

The remote control unit RM-P1U (optional) permits recording start/stop to be controlled from a distance.

1



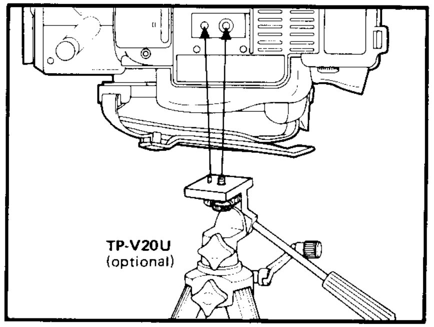
Plug the remote control cable into the REMOTE connector.

2 Press the standby button to engage the Recording Standby mode.

3 To start recording, set the remote control's switch to REC; to stop temporarily, set it to PAUSE.

Note:
Fader will not function when remote control unit is connected.

TRIPOD MOUNTING

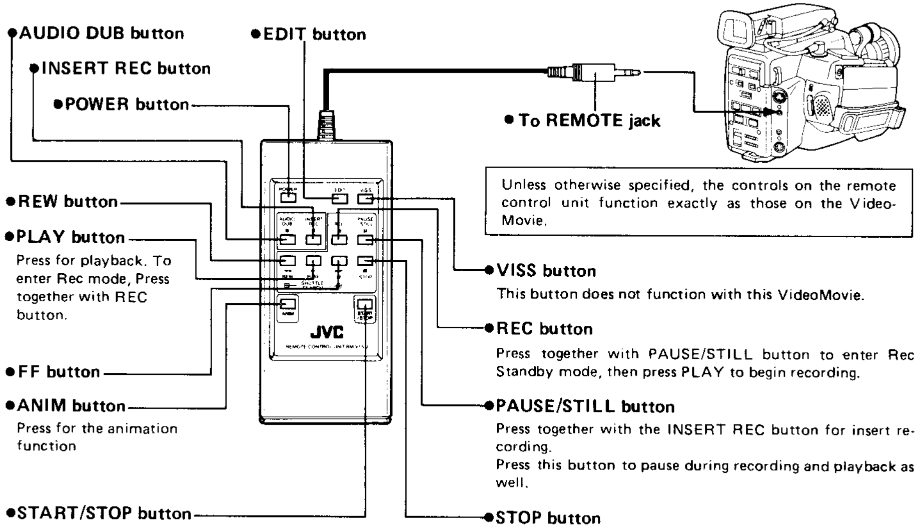


Align the screw and camera direction stud of the tripod with the camera's tripod mounting socket and stud hole, and firmly tighten the screw.

USING THE REMOTE CONTROL UNIT RM-V15U (optional)

The remote control unit RM-V15U (optional) permits VCR functions to be controlled from a distance.

- Plug the remote control cable of the remote control unit into the remote connector on the VideoMovie.



- **AUDIO DUB button**
- **EDIT button**
- **INSERT REC button**
- **POWER button**
- **To REMOTE jack**

Unless otherwise specified, the controls on the remote control unit function exactly as those on the VideoMovie.

- **REW button**
- **PLAY button**
  Press for playback. To enter Rec mode, Press together with REC button.
- **FF button**
- **ANIM button**
  Press for the animation function
- **START/STOP button**
- **VISS button**
  This button does not function with this VideoMovie.
- **REC button**
  Press together with PAUSE/STILL button to enter Rec Standby mode, then press PLAY to begin recording.
- **PAUSE/STILL button**
  Press together with the INSERT REC button for insert recording.
  Press this button to pause during recording and playback as well.
- **STOP button**

Note:
The Rehearsal mode cannot be engaged using this unit.

Animation function

Animation produces the illusion of movement in otherwise stationary scenes or objects. This technique is accomplished by shooting a series of slightly different pictures of the same scene or slightly different poses of the same object for a brief period of about 1/2 second.

Operation

1. With the VideoMovie in the Record-Pause mode.
2. Press the ANIM button of the remote control unit RM-V15U.
   - Recording mode indicator and Pause mode indicator blinks alternately on the VideoMovie's LCD.
3. Press the Recording Start/Stop button or Play button after focusing the camera on a subject.
4. Recording stops automatically in the Record-Pause mode after about 1/2 second.
5. Repeat step 3 for the required number of shots.
6. Playback the recorded series to check if results were satisfactory.

Notes:

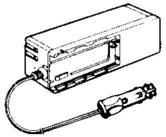
- The Animation mode can only be engaged from the Record-Pause mode.
- Before recording in the Animation mode at the very beginning of a tape, set the VideoMovie to the Record mode for about 5 seconds, in order that the tape runs smoothly. Using the Fade-in function at this point is a good way to begin an animated programme.
- During an Animation sequence, fading cannot be engaged.
- Release the Animation mode by pressing the ANIM button or the STOP button.
- If recorded background sound is undesirable, use the Audio Dubbing function to erase or replace it.
- When playing back an animated recording, the colour may be unstable with same TVs.

SYSTEMS FLEXIBILITY

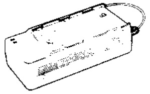
For maximum enjoyment, make the most of the provided or optional accessories depending on the situation.

- **Regular battery pack BN-V5GU**
  Pages 10 and 32
- **High-capacity battery pack BN-V6GU**
  Pages 10 and 32
- **Super High-capacity battery pack BN-V7GU**
  Pages 10 and 32

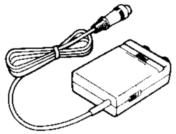
- **Car battery charger BH-V5E**
  Pages 10 and 32
  Use to charge the battery pack, or power the GR-S70E using a car battery.



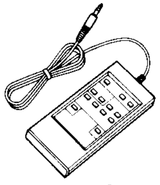
- **AC power adapter/battery charger AA-V6EG**
  Pages 10 and 32
  Use to power the GR-S70E with household AC current or charge the battery pack



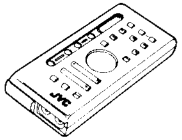
- **RF unit RF-V3E**
  Pages 25 and 26
  Use to connect the GR-S70E to a regular TV receiver for playback.



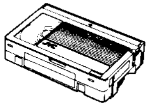
- **Remote control unit RM-V15U**
  Page 35
  Controls VideoMovie's VCR functions from a distance.



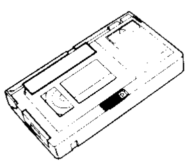
- **Character generator CG-P50E**
  Page 34
  Allows superimposition of titles, dates and lap time during recording.



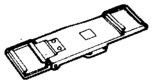
- **Compact video cassette SE-C30**
  Page 3
  Allows 30 minutes of recording and playback in SP mode, and 60 minutes of recording and playback in LP mode.



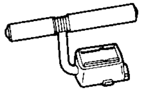
- **Cassette adapter C-P6U**
  Page 33
  Enables the SE-C30/EC-30 compact video cassette to be used with regular S-VHS/VHS machines.



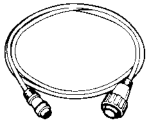
- **Shoe adapter CU-V410U**
  Page 34
  Use to attach microphone, character generator, etc.



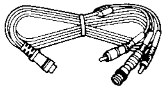
- **Carrying handle VU-V130U**
  Use to carry GR-S70E.



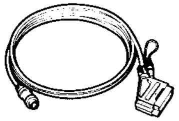
- **Conversion cable VC-V810U**
  Page 31
  For connecting the GR-S70E to a VCR with a 10-pin camera connector.



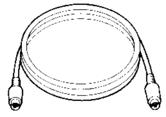
- **AV output cable VC-826E**
  Use to connect GR-S70E to television set equipped with audio/video input connectors for playback, or to a second video recorder for dubbing.



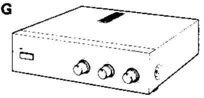
- **AV/S output cable VC-V8961SE**
  Pages 27, 28 and 31
  Use to connect the VideoMovie to a TV or VCR equipped with a 21-pin connector for monitoring or dubbing/editing.



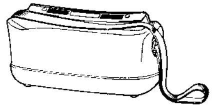
- **S-VIDEO cable VC-V44U**
  Page 26
  Use to connect the GR-S70E to a television set equipped with an S-VIDEO INPUT connector for playback, or to an S-VHS recorder for dubbing.



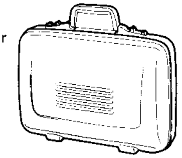
- **RGB signal converter KM-V7EG**
  Page 27



- **Carrying bag CB-V25U**
  Use to carry the GR-S70E together with basic accessories.



- **Carrying case CB-V35U**
  Use to carry the GR-S70E together with accessories.



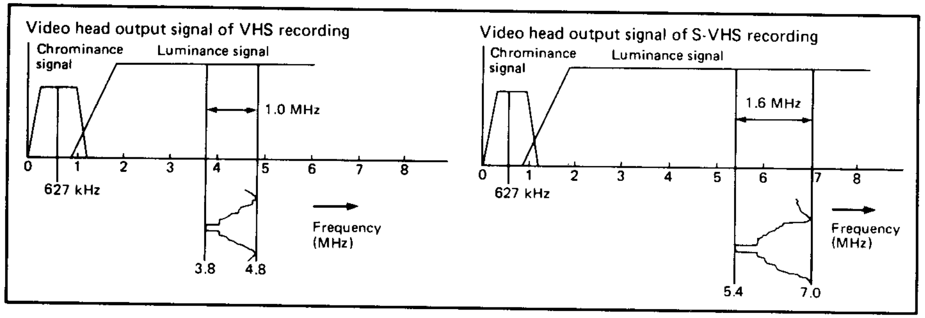
FOR A BETTER UNDERSTANDING OF S-VHS AND VHS

S-VHS vs. VHS

- VHS is the world's most popular video format. If you already own a VCR, most likely it is a VHS machine.
- **S-VHS is a new video sub-format based on VHS. It offers superior picture quality with increased horizontal resolution by shifting the FM carrier frequency of the luminance signal from the conventional 3.8 – 4.8 MHz range to a higher one of 5.4 to 7 MHz.**

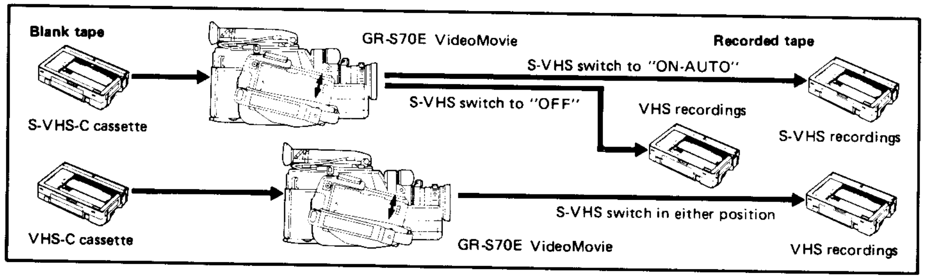
- The GR-S70E is equipped for recording and playback in both the S-VHS and VHS formats. Therefore, you can still play back your VHS software programs and previously recorded family recordings.
- You can switch to the world of S-VHS for your new recordings to enjoy breathtaking picture quality. Or to exchange recordings with someone whose VCR is not S-VHS, simply record in the VHS mode, whether with a VHS cassette or an S-VHS cassette.

Recording Signal Spectrum

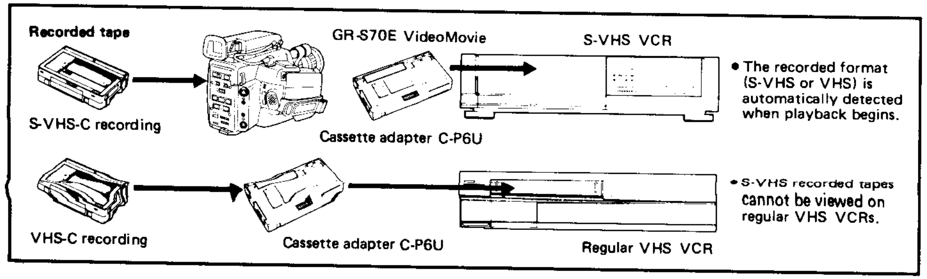


Compatibility between S-VHS and VHS

Recording



Playback



- The recorded format (S-VHS or VHS) is automatically detected when playback begins.
- S-VHS recorded tapes cannot be viewed on regular VHS VCRs.

SUPPLEMENTAL INFORMATION

What is "colour temperature"?

Light is composed of various colour components in different proportions. A relationship exists between the temperature of a light source and the colour components of the emitted light; as the temperature rises, the colour of the light varies from red, orange, yellow, white to blue in that order. "Colour temperature" is a value that expresses differences in colour among light sources, measured in Kelvin degrees. Bluish light has a higher colour temperature than reddish light.

What is "white balance"?

Making the colours look natural on TV is what white balance is all about. Because a camera is not as adaptable as the human eye, if a light source is reddish, white subjects in that light are recorded as reddish. White balance adjustment is performed to compensate for colour temperature variations of light so that whites are reproduced as white. Correct white balance makes all other colours correct. The GR-S70E can perform automatic white balance adjustment in the full-auto mode. However, if illumination is insufficient, white balance adjustment cannot be performed. To obtain correct colours, therefore, sufficient illumination is essential.

What is "illuminance"?

"Illuminance" (also called "luminance") is the intensity or brightness of light, expressed in lux. The GR-S70E is designed to provide best pictures under the conditions of a 700-lux illuminance, although shooting is possible all the way down to 10 lux. To obtain good pictures in very bright light, the use of an ND (neutral density) filter is recommended. (See chart on this page.)

How to get good colour pictures

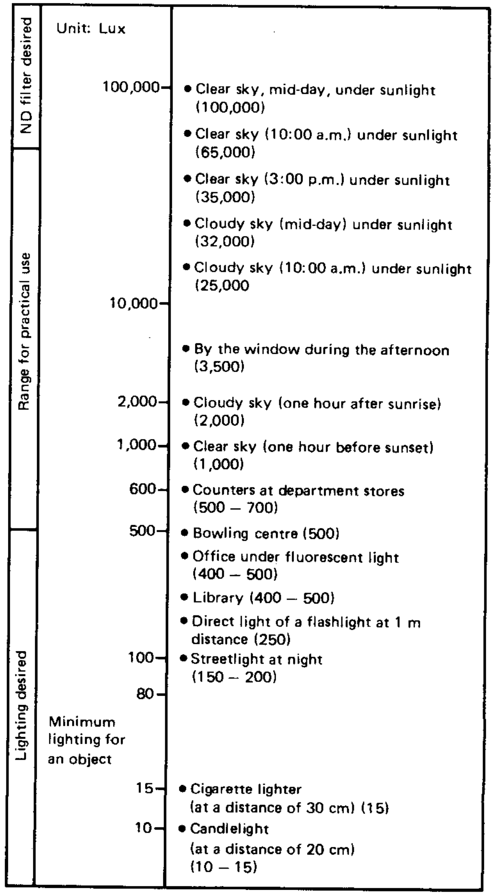
The simplest way is to provide sufficient lighting (close to the camera's reference illuminance) and accurately adjust the camera to the colour temperature of that lighting. If light sources of different colour temperatures are used together, accurate white balance adjustment is very difficult. For example, if natural light is mixed with artificial light, which is likely to occur next to windows, correct colours of the subject are difficult to obtain. It is recommended in such cases that curtains in the room be closed to shut out light from outside. Also, when artificial lighting devices are used, they should all have the same colour temperature. For example, it is recommended that incandescent or halogen lamps not be used together with fluorescent lighting.

Colour temperatures of various artificial lighting

Type of illumination		Colour temperature
Tungsten lamp for home use		2800 K
Tungsten lamp for photographic use		3200 K
Quartz-halogen lamp		
Blue lamp for photographic use		5000 K
Fluorescent lamp	Warm white	3500 K
	White	4500 K
	Daylight type	6500 K

Illuminance chart

- The values on this chart are approximated to give you a rough reference.



- Clear sky, mid-day, under sunlight (100,000)
- Clear sky (10:00 a.m.) under sunlight (65,000)
- Clear sky (3:00 p.m.) under sunlight (35,000)
- Cloudy sky (mid-day) under sunlight (32,000)
- Cloudy sky (10:00 a.m.) under sunlight (25,000
- By the window during the afternoon (3,500)
- Cloudy sky (one hour after sunrise) (2,000)
- Clear sky (one hour before sunset) (1,000)
- Counters at department stores (500 – 700)
- Bowling centre (500)
- Office under fluorescent light (400 – 500)
- Library (400 – 500)
- Direct light of a flashlight at 1 m distance (250)
- Streetlight at night (150 – 200)
- Cigarette lighter (at a distance of 30 cm) (15)
- Candlelight (at a distance of 20 cm) (10 – 15)

IN CASE OF DIFFICULTY

What may initially appear to be trouble is not always a real problem. Make sure first . . . .

Symptoms	Check points
Power	
No power is supplied.	●Is the battery pack correctly installed? ●Is the battery pack charged? ●Is the power supply unit correctly connected? ●Is the POWER switch of the connected AC adapter set to ON?
Recording	
Recording is impossible.	●Check to see if the cassette safety tab is in place. See page 3.
Picture colours greatly differ from actual subject colours	●If in the manual white balance mode, check the setting of the 💡 / ▭ / ☀ button.
No sound is recorded with an external microphone.	●Is the microphone's switch set to ON?
Recording does not start.	●Have you pressed the REC standby button first?
Playback	
Tape is running, but no playback picture appears.	●Is the VIDEO/TV switch of the RF unit set to VIDEO? ●Is the TV receiver set to your video channel? ●If A/V connection is used, is the TV's VIDEO/TV switch set to VIDEO?
Noise bars appear in the playback picture.	●Use the TRACKING control to reduce noise bars.
Tape transport	
Tape stops during fast forward or rewind.	●Is the "M" indication visible in on the LCD? If so, press the MEMORY button to cancel the memory function.
Rewinding or fast forwarding is impossible.	●Check to see if the tape has already been fully wound on one reel or the other.
Other	
No function is available with more than two mode indicators lit.	●If this should happen when using power supply units other than the battery pack, turn their POWER switch on and off. With a battery pack, replace it with another charged one.
Vertical white lines appear when shooting a very bright object.	●This may occur when the background contrasts very much with the object. This is normal.

The GR-S70E is a microcomputer-controlled device. External noise and interference might prevent it from functioning properly. In such cases, first disconnect its power supply unit (battery pack, AC power adapter, etc.); and then reconnect it and proceed as usual from the beginning.

SPECIFICATIONS

Format	: S-VHS/VHS PAL standard
Power source	: DC 9.6 V ⎓
Power consumption	: 9 W
Signal system	: PAL-type colour signal and separated Y/C signals comforming to PAL, 625 lines
Recording system	: Luminance: FM recording Colour: Converted sub-carrier direct recording Conforms to "S-VHS" standard
Cassette	: "S-VHS-C"/"VHS-C" cassette
Tape speed (SP)	: 23.39 mm/sec
(LP)	: 11.70 mm/sec
Recording time	
Max. (SP)	: 30 minutes (with SE-C30 cassette)
(LP)	: 60 minutes (with SE-C30 cassette)
VIDEO	
Output	: 1 Vp-p, 75 ohms, unbalanced (via AV connector)
S/N ratio	: More than 40 dB (with Rohde & Schwarz noise meter)
AUDIO	
Output	: –6 dBs, 1 k-ohm (via AV connector)
Microphone input	: –68 dBs, high impedance, unbalanced
Pickup	: 1/2" format CCD
Minimum required illumination	: 10 lux (at F/1.4)
Illumination range	: 10 – 100,000 lux
Lens	: F/1.4, f = 8.5 – 68 mm, 8:1 two-speed power zoom lens with auto iris control and macro position, filter diameter 52 mm
Viewfinder	: Electronic viewfinder with 0.6" black/white CRT
Shutter speed	: Switchable (1/250, 1/500, 1/1000 sec.)
Colour temperature switching	: Switchable (3,200 K/4,500 K/5,500 K)
White balance adjustment	: Full-auto/preset standard
Operating temperature	: 0°C to +40°C
Operating humidity	: 35 %to 80 %
Storage temperature	: –20°C to +50°C
Weight	: 1,2 kg (with viewfinder)
Dimensions	: 111(W) x 150(H) x 253(D) mm (incl. viewfinder)

AA-V6EG SPECIFICATIONS

Power requirement	: AC 110 – 240 V∿, 50/60 Hz
Power consumption	: 23 watts
Output	: DC 14 V ⎓ 1.1A (Charge) DC 9.6 V ⎓ 1.2 (VideoMovie)
Charging system	: Constant current, peak detection, timer controlled
Dimensions	: 150(W) x 42(H) x 69(D) mm
Weight	: Approx. 380 g

C-P6U SPECIFICATIONS

Type	: VHS cassette adapter
Dimensions	: 188(W) x 25(H) x 104(D) mm
Weight	: 240 g
Accessory	: "R6"-size battery x 1

Provided accessories:

AC power adapter/battery charger	AA-V6EG
Cassette adapter	C-P6U
Cassette tape	SE-C30
Battery pack	BN-V6GU
AV/S output cable	VC-V8961SE
Battery for clock operation	CR2025
Shoulder strap	
Title Easel	

For optional accessories, refer to page 36

Specifications shown are for SP mode unless otherwise specified.
Design and specifications subject to change without notice.

SECTION 1
SERVICE CAUTION AND DISASSEMBLY

1.1 PRECAUTIONS

1. Disconnect unit from power before removing or soldering components.
2. When removing a fastener (screw, washer, etc.), be careful not to drop it into the mechanism. If a fastener should be dropped, be sure to retrieve it before operation.
3. When removing a connector, pay special attention to flexible wires and wiring so as not to damage them.
4. Some resistors, shorting jumpers (0 ohm resistance), ceramic capacitors and diodes are chip parts. These chip parts cannot be reused after they are once removed. Refer to Section 1.3.
5. Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available. Especially, when the VR of the camera portion is adjusted, all VRs may require adjustment.
6. When removing and replacing parts, be careful not to damage or displace other parts. (Be especially careful with the video head assy and the tape transport mechanism.)
7. Pay special attention to the CCD image sensor and optical filter so that they won't be dusty, soiled or damaged. If it is soiled with fingerprints, etc., clean gently with silicon lens tissue or chamois.
8. When removing and replacing ICs, be careful not to damage circuit patterns.

1.2 REQUIRED TEST EQUIPMENT FIXTURES/TOOLS AND OTHERS

For proper measurement, adjustment and maintenance, the following test equipment, fixtures/tools are strongly recommended.

1.2.1 Test equipments

1. Oscilloscope (dual-trace, more than 20 MHz)
2. Frequency counter
3. Audio tester and Audio signal generator
4. Color video monitor
5. Halogen lamps
6. Video signal generator
7. Sweep signal generator
8. Vectorscope

1.2.2 Tools

1. 1.5 mm hexagonal wrench.
2. Fine tipped, well insulated soldering "pencil" (with absorbent) : Temp 130°C –260°C.

- **Color bar signal**

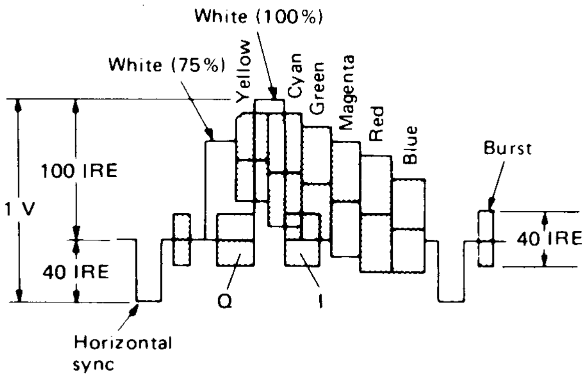


Fig. 1-2-1 Color bar signal waveform

- **Color bar pattern**

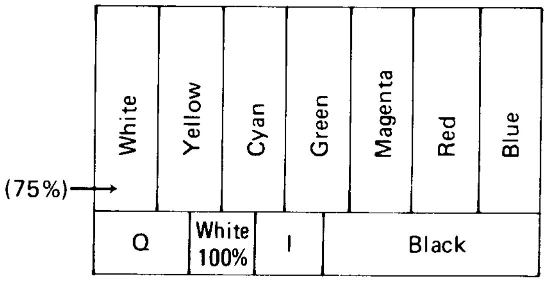


Fig. 1-2-2 Color bar pattern

– Multi-burst –

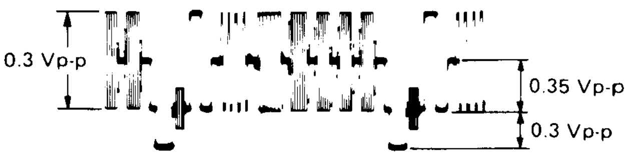


Fig. 1-2-3 Input signal level for multi-burst

– Video sweeper –

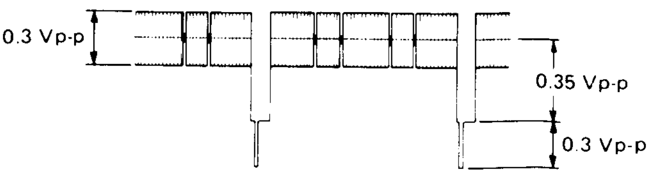
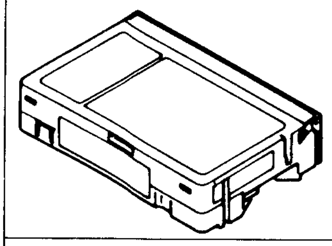
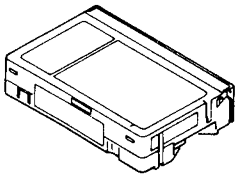
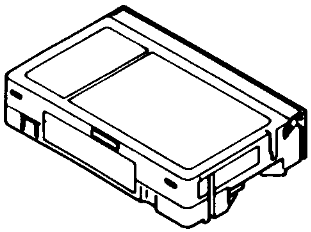
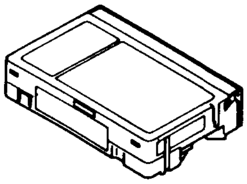
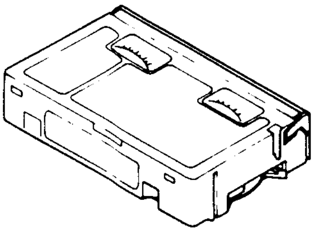
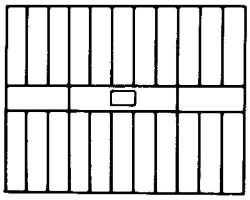
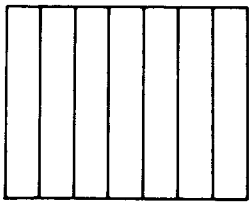
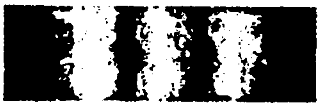
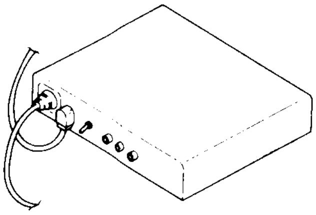
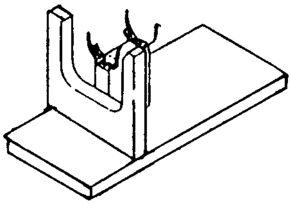
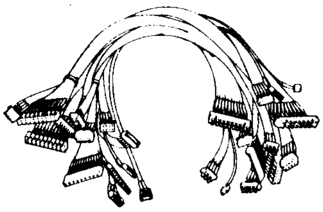
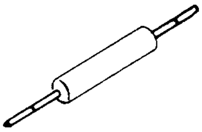
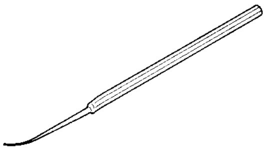
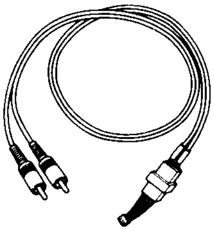
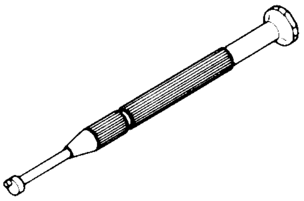
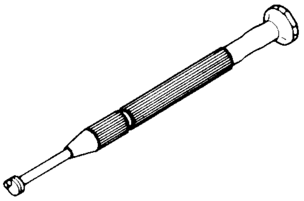
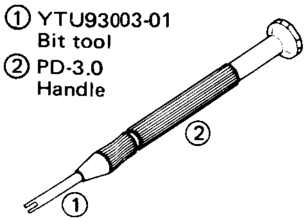
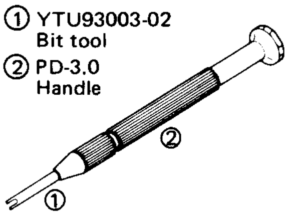
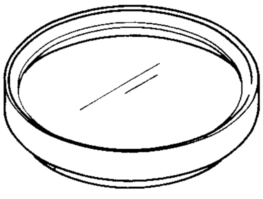


Fig. 1-2-4 Input signal level for video sweeper

1.2.3 Special test equipment and tools required for adjustments

Alighment tape SP interchangeability MHPE-C or MH-C2	Alignment tape LP interchangeability MHPE-LC	Alignment tape N/SP PB Y/C level MHVE-2C or MH-C2	Alignment tape S/SP PB Y/C level MHVE-2HC or MH-C2H
			
Cassette torque meter PUJ50431-2	Grey scale pattern (GS-2A) Reflection type, 11 steps, $\gamma = 2.2$	Color base pattern (CC-2A) Reflection type, 7-color	Back focus adjustment chart PUJ93944-2
			
Y/C separator PUJ25579-2	Camera adjust stand YTU93010A-2	Patching cord YTU93025A	Adjustment jig for compact VTR YTU93004-2
			
Chip IC replacing tool PTS40844-2	Y/C separator tool YTU93006	Back focus adjustment handle PUJ37186A	Auto focus unit Back focus adjustment handle PUJ37186B
			
Chip parts replacement tool assy YTU93003A	Chip parts replacement tool assy YTU93003B	Color temperature conversion filter (PUJ53340A-C2,C4,C8,W2,W4,W8)	
① YTU93003-01 Bit tool ② PD-3.0 Handle 	① YTU93003-02 Bit tool ② PD-3.0 Handle 		

1.3 REPLACEMENT OF CHIP PARTS

For replacing chip parts, proceed it as follows.
Use a well insulated fine-tipped soldering iron (approx. 17 W, 130°C ~ 260°C in temp.).
In addition, it is recommended to use a soldering iron (55 W approx.) with solder absorber for convenience.

Caution:
- Do not apply heat for more than 3 seconds.
- Do not rub electrodes.
- Do not reuse chips removed once. Discard them.
- Supplementary cementing is not required.

1.3.1 Soldered condition of chip parts

- Resistors, capacitors, etc.

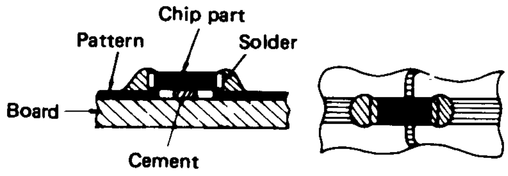


Fig. 1-3-1 Soldering condition-1

- Transistors, diodes, etc.

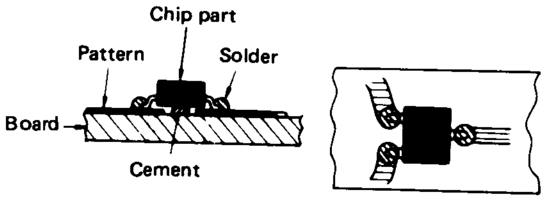


Fig. 1-3-2 Soldering condition-2

1.3.2 How to remove chip parts

- Resistors, capacitors, etc.

1. Set a chip parts replacing tool onto the chip parts to hold it down.
2. Unsolder at a side of the chip parts.

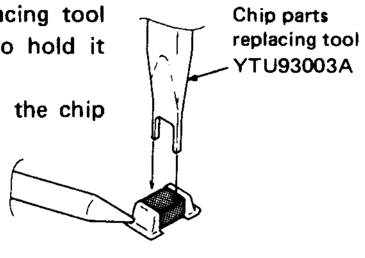


Fig. 1-3-3 R/C removal-1

3. Remove the chip parts by twisting and sliding it.

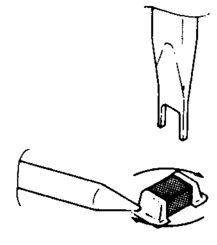


Fig. 1-3-4 R/C removal-2

- Transistors, diodes, etc.

1. Unsolder at the one-lead side of the chip parts.

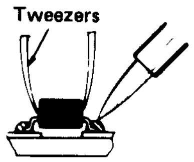


Fig. 1-3-5 Tr/Diode removal-1

2. Lift the unsoldered side upwards.

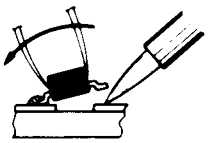


Fig. 1-3-6 Tr/Diode removal-2

3. Heat the other two leads simultaneously and remove the chip parts upwards.

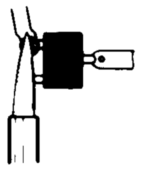


Fig. 1-3-7 Tr/Diode removal-3

1.3.3 Preheating and soldering

When setting new chip parts, especially capacitors, but except transistors, preheat them with hot air (150°C approx.) by use of a blower type of hair dryer for about 2 minutes just before solderingg. For soldering, use a soldering iron of 30 W approx.

1.3.4 How to set and solder chip parts

1. Presolder the contact points of the circuit pattern, to which the chip parts will be soldered.

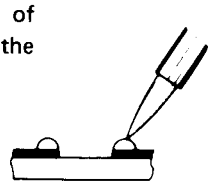


Fig. 1-3-8 Soldering-1

2. Holding down the chip parts with the chip parts replacing tool, solder it with a soldering iron.

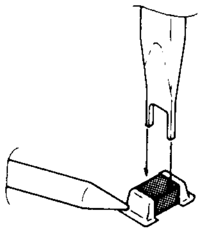


Fig. 1-3-9 Soldering-2

1.4 REMOVING OF FLAT ICs

(Recommendable manner)

1. For removing solder chips from IC's pins, use a solder remover or a wiry solder absorber.
2. Heat the IC's tips evenly by moving the chip IC replacing jig around them, and detach the IC's leads with a tool in the way of using a lever.
3. Do not reuse ICs removed once. (Discard them.)

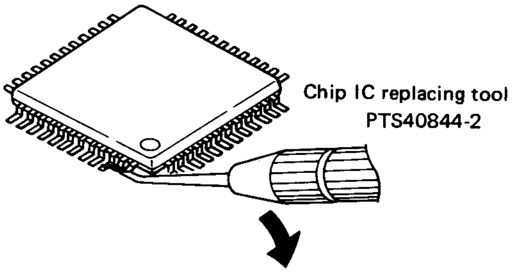


Fig. 1-4-1 Flat IC removal

1.5 DISASSEMBLY OF CAMERA SECTION

For servicing (including parts replacement) of the camera section with ease, follow the procedures in the order of descriptions with illustrations that are easy to understand the whole structure of the VideoMovie besides sectional parts layout.

1.5.1 Electronic viewfinder (E. VF) and WIND SCREEN

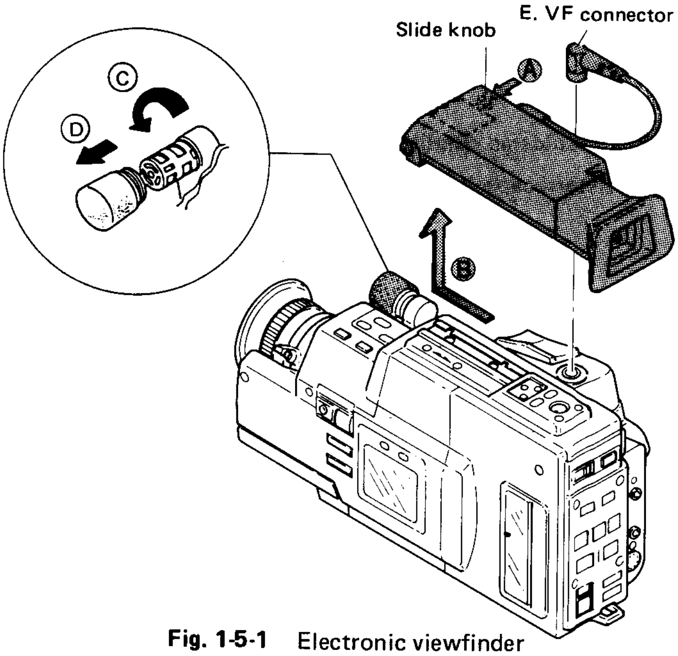


Fig. 1-5-1 Electronic viewfinder

1. Disconnect the E. VF connector from the main body first, then, pushing the slide knob Ⓐ in the direction of the arrow mark, slide the E. VF in the direction of the arrow mark Ⓑ to take it off.
2. Take off the WIND SCREEN by sliding it in the direction of the arrow mark Ⓒ and Ⓓ .

1.5.2 E. VF shoe & Deco plate

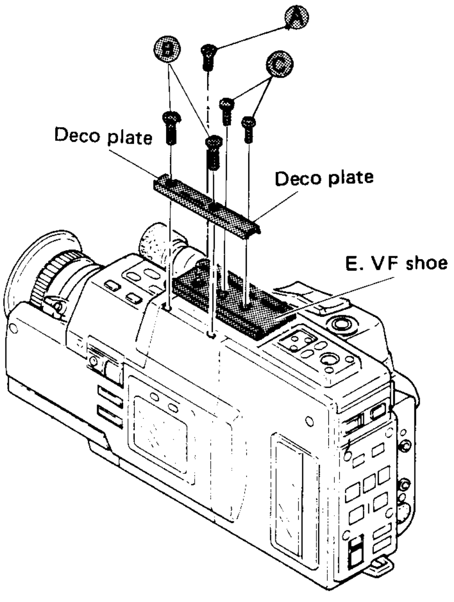


Fig. 1-5-2 E. VF shoe cover

1. Remove the screws Ⓐ, Ⓑ and Ⓒ and take off the E. VF shoe and Deco plate.

1.5.3 Cassette cover

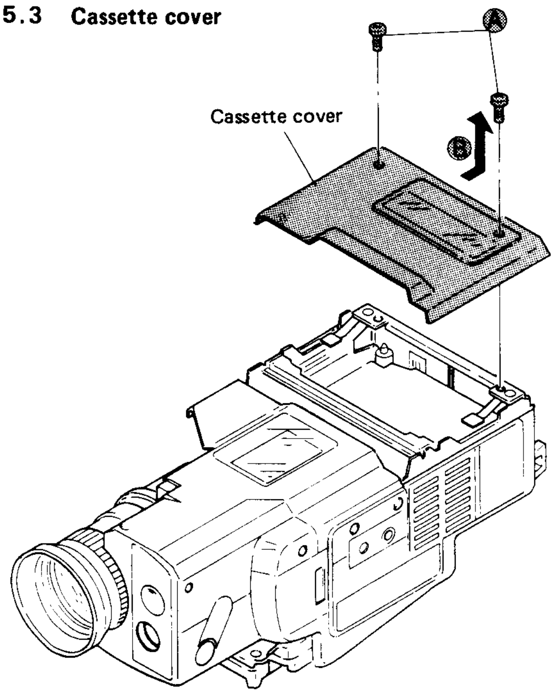

Ⓐ
Cassette cover
Ⓑ

Fig. 1-5-3 Cassette cover

1. After removing the screws Ⓐ, take off the cassette cover by sliding it in the direction Ⓑ.

1.5.4 Upper case & Front cover

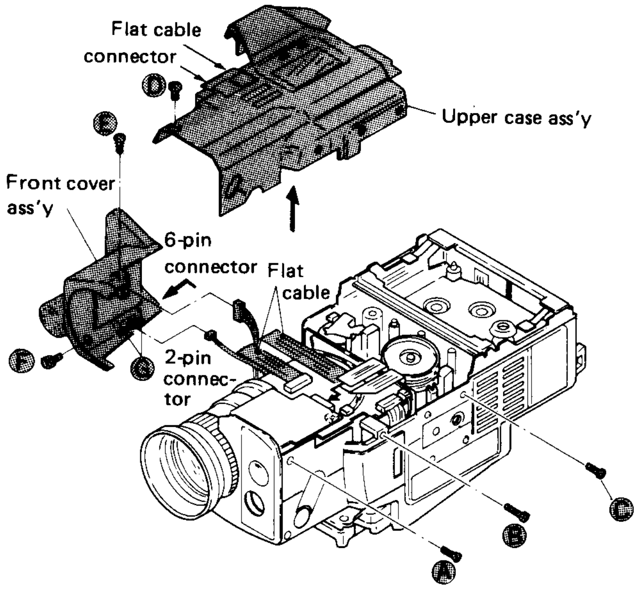

Flat cable connector
Ⓓ
Ⓔ
Upper case ass'y
Front cover ass'y
6-pin connector
Flat cable
Ⓕ
Ⓖ
2-pin connector
Ⓒ
Ⓑ
Ⓐ

Fig. 1-5-4 Upper case and front cover

1. Remove the screws Ⓐ, Ⓑ, Ⓒ, Ⓓ, Ⓔ and Ⓕ.
2. Take off the upper case and front cover by pulling them in the directions of the arrow marks respectively.
3. Disconnect the 2-pin and 6-pin connectors gently from the front cover, and remove the screws Ⓖ to take off the mic assembly.
4. The upper case and the main body are connected with a flat cable. Unlock its connection first and disconnect it from the upper case to separate them.

1.5.5 Front panel

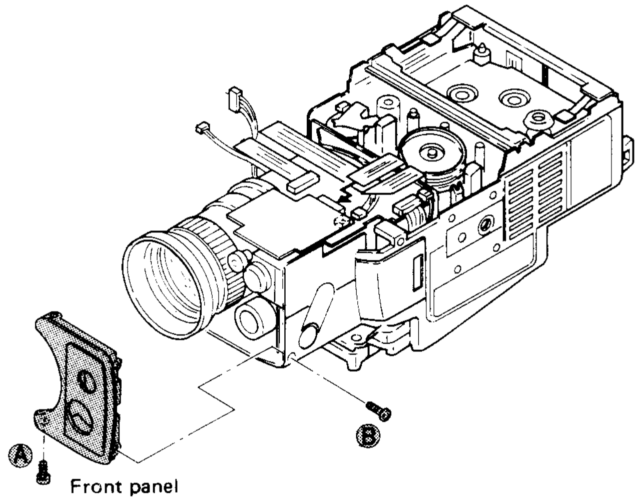

Ⓐ
Front panel
Ⓑ

Fig. 1-5-5 Front panel

1. Remove the screws Ⓐ and Ⓑ and take off the front panel.

1.5.6 Base assembly

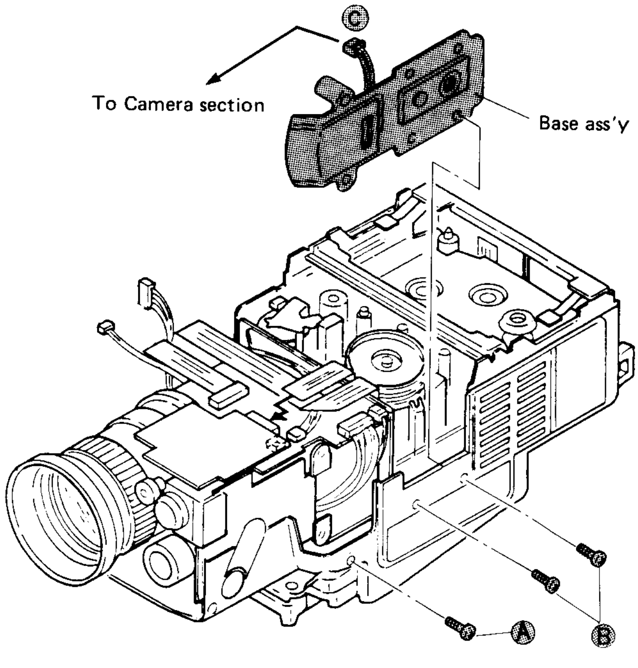

Ⓒ
To Camera section
Base ass'y
Ⓐ
Ⓑ

Fig. 1-5-6 Base ass'y

1. Remove the screws Ⓐ and Ⓑ and disconnect the connector Ⓒ to take off the base ass'y.

Note: *The connector Ⓒ is connected to CN409 of the IND (indicator) board of the camera section (see Fig. 1-5-7).*

1.5.7 Camera section

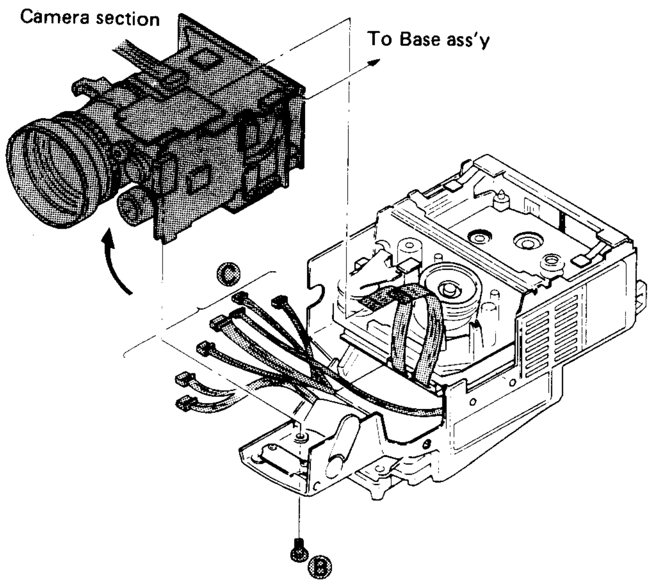
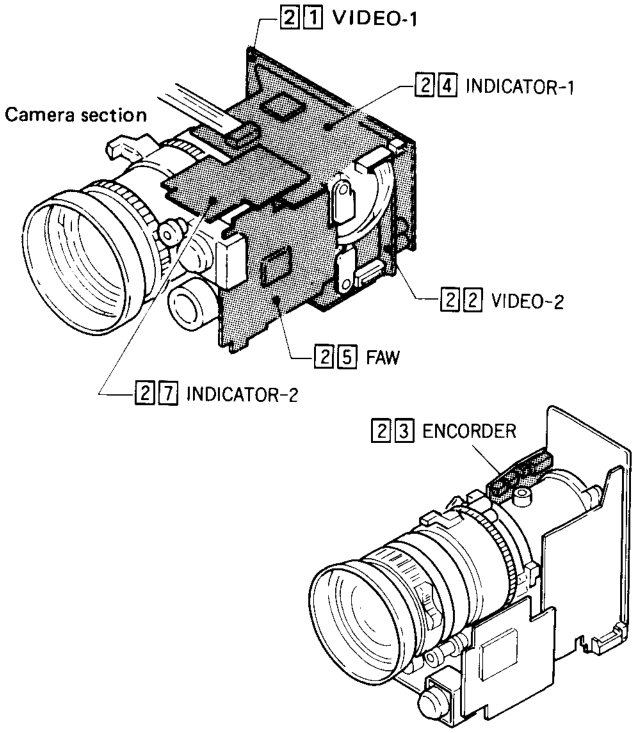

Camera section
To Base ass'y
Ⓒ
Ⓑ

Fig. 1-5-7 Camera section

1. Remove the screw Ⓑ and disconnect connectors and flat cables Ⓒ, then gently draw the camera section out of the lower case.

1.5.8 P.C. boards of the camera section

- **Names of boards**


21 VIDEO-1
24 INDICATOR-1
Camera section
22 VIDEO-2
25 FAW
27 INDICATOR-2
23 ENCORDER

- Camera section disassembled from the lower case ass'y

Fig. 1-5-8 Boards of the camera section

1.5.9 Setup for troubleshooting and checkup of the camera section

1. To operate only the camera section as it is disassembled from the deck section for troubleshooting and checkup, make sure to place it on the camera mount.
2. Connect patch cords Ⓐ, Ⓑ and flat cable Ⓒ to the camera section and supply 9.6 V DC for checkup of operations.

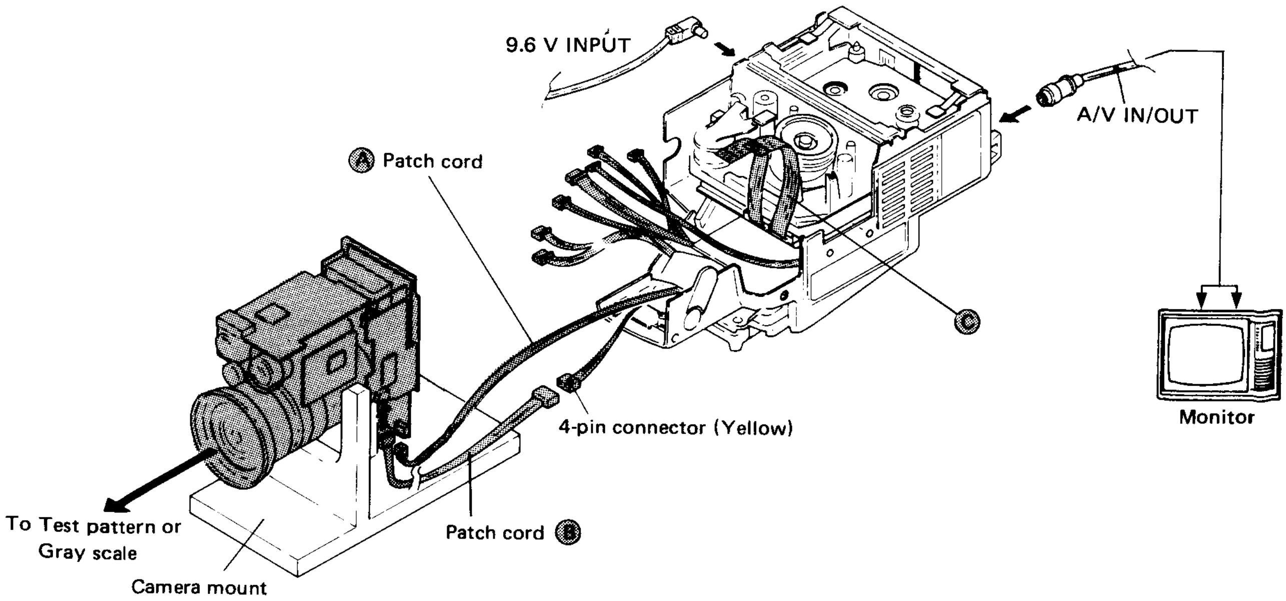

9.6 V INPUT
A/V IN/OUT
Ⓐ Patch cord
Ⓒ
Monitor
4-pin connector (Yellow)
To Test pattern or Gray scale
Patch cord Ⓑ
Camera mount

Fig. 1-5-9 Setup of the camera section

1.5.10 FAW & Indicator-2 boards

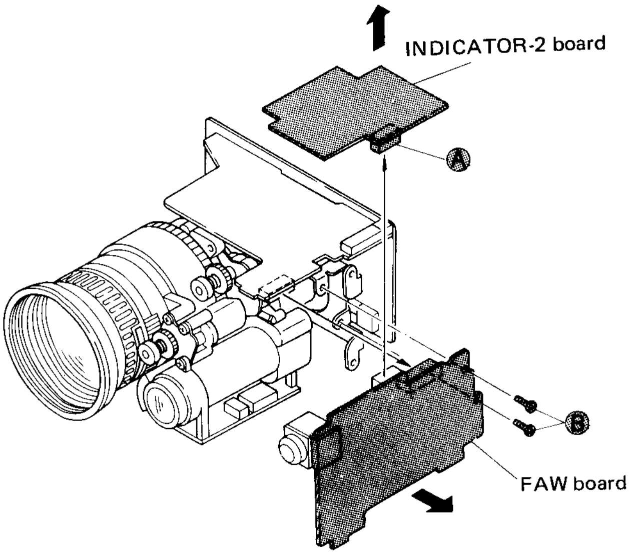

INDICATOR-2 board
Ⓐ
Ⓑ
FAW board

Fig. 1-5-10 Removing of P.C. boards (1)

1. Disconnect the connector Ⓐ and take off the Indicator-2 board by drawing it out in the direction of the arrow mark (upward).
2. Remove the screws Ⓑ and draw out the FAW board in the direction of the arrow mark (rightward) to take it off.

1.5.11 Indicator-1 & Encoder boards

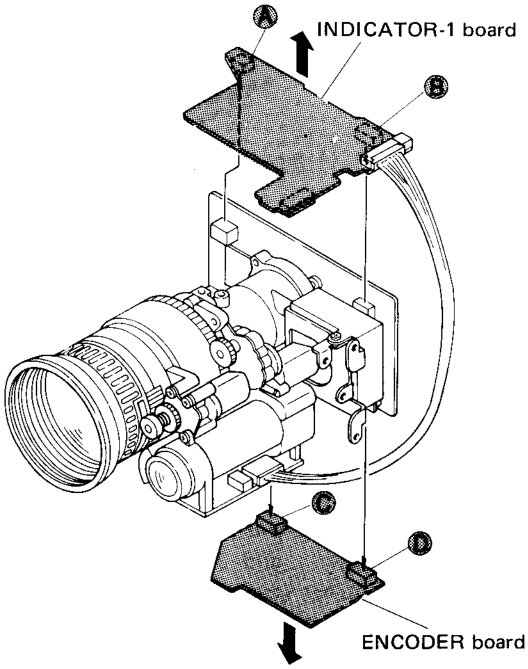

Ⓐ
INDICATOR-1 board
Ⓑ
Ⓒ
Ⓓ
ENCODER board

Fig. 1-5-11 Removing of P.C. boards (2)

1. Disconnect the connectors Ⓐ, Ⓑ, Ⓒ and Ⓓ, and draw out the Indicator-2 and Encoder boards in the respective directions of the arrow marks to take them off.

1.5.12 DC-DC converter & Video-2 board

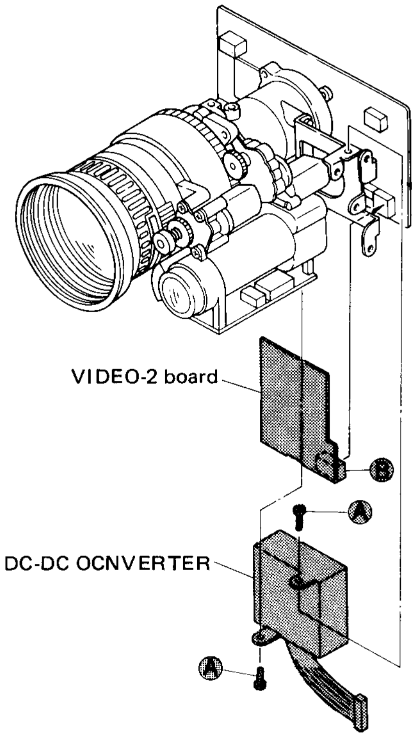

VIDEO-2 board
Ⓑ
Ⓐ
DC-DC OCNVERTER
Ⓐ

Fig. 1-5-12 Removing of P.C. boards (3)

1. Remove the screw Ⓐ and disassemble the DC-DC converter from the optical bracket.
2. Disconnect the connector Ⓑ and remove the Video-2 board from the Video-1 board.

1.5.13 Replacement of image sensor

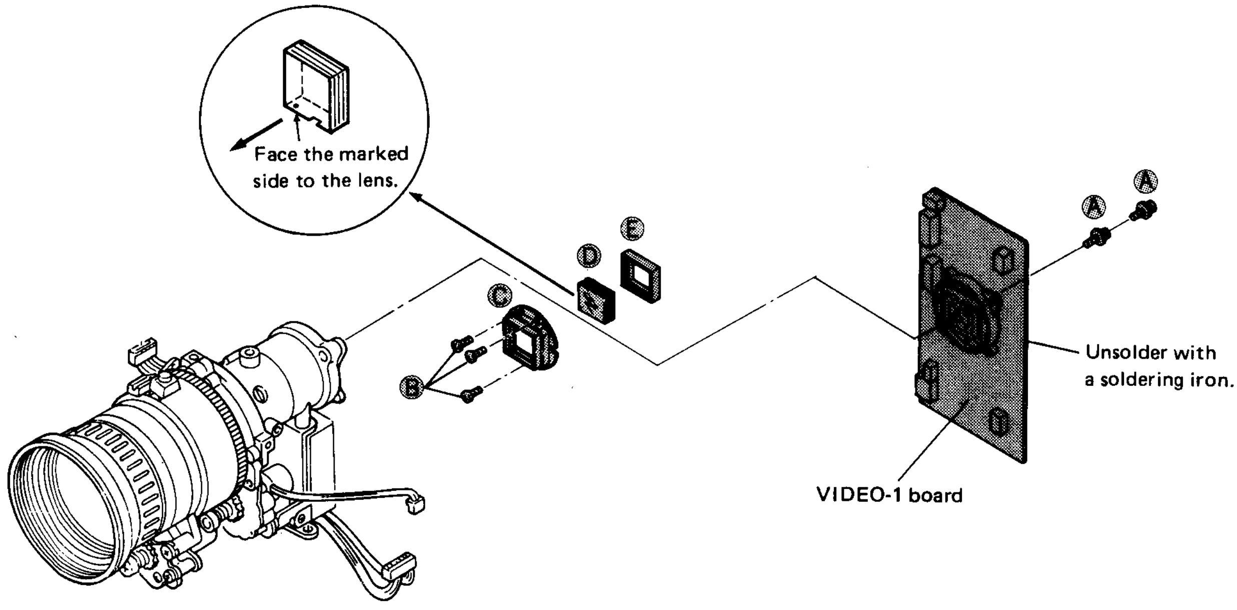

Face the marked side to the lens.
Ⓐ
Ⓑ
Ⓒ
Ⓓ
Ⓔ
Unsolder with a soldering iron.
VIDEO-1 board

Fig. 1-5-13 (A) Removing of image sensor (1)

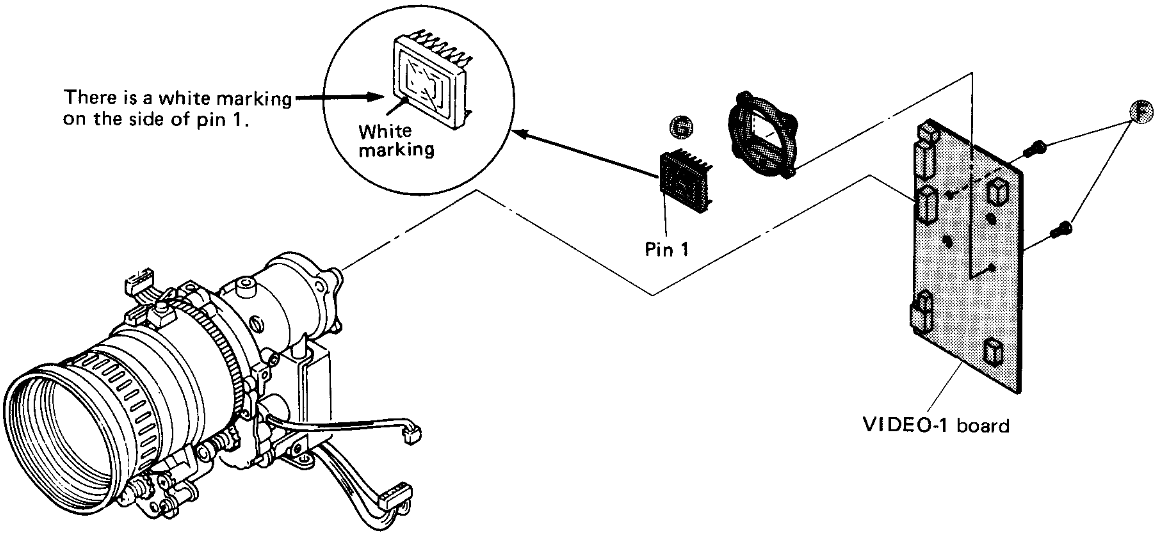


Fig. 1-5-13 (B) Removing of image sensor (2)

- **Disassembly of image sensor from optical block**

1. Remove the screw Ⓐ and take off the Video-1 board together with the imager holder.
2. Remove the screws Ⓑ and take the optical LPF holder Ⓒ, optical LPF Ⓓ and space rubber Ⓔ to respective pieces.
3. Unsolder the CCD image sensor and remove the screws Ⓕ, then take off the CCD image sensor Ⓖ.

- **Installing a new image sensor**

4. After removing the protection seal from a new CCD image sensor Ⓖ, install it to the Video-1 board.
   At that time, make sure to set it so that the marking on the side of pin 1 is positioned on the left bottom as viewed in the figure.
5. After the CCD image sensor is set on the Video-1 board, secure it by soldering. Be careful not to apply excessive heat to the sensor and the board.
6. Next, set the space rubber Ⓔ, optical LPF Ⓓ (to face the marking to the lens), optical LPF holder Ⓒ one after another and secure them with three screws Ⓑ.
7. Install the Video-1 board together with the imager holder to the optical block, and temporarily fix it with two screws Ⓐ so lightly as it can be moved.
8. Install the Indicator-1, and -2 boards and encoder board. Picking up an object (test pattern) in the macro-focus, adjust setting position of the Video-1 board so that no vignetting is observed at any corner of the image.
   Next, make sure of horizontality of the image by eyes. If it is confirmed that the image is kept nearly horizontally by fine-adjustment, tighten the two screws Ⓐ.
9. After all of the above works for the replacement, perform the specific adjustments of the camera section.

1.5.14 Zoom motor, Focus motor

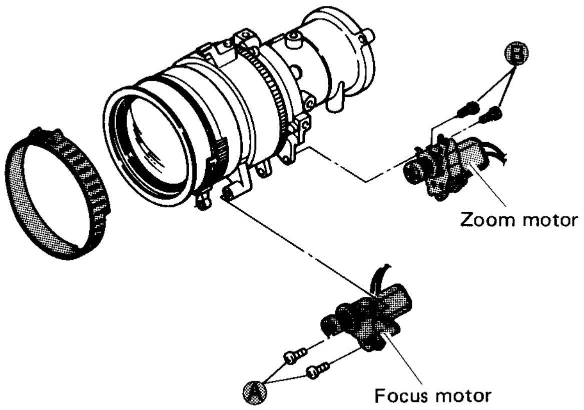


Fig. 1-5-14 Zoom and focus motors

1. Remove the screws Ⓐ and detach the focus motor from the lens unit.
2. Remove the screws Ⓑ and detach the zoom motor from the lens unit.

1.5.15 AF unit

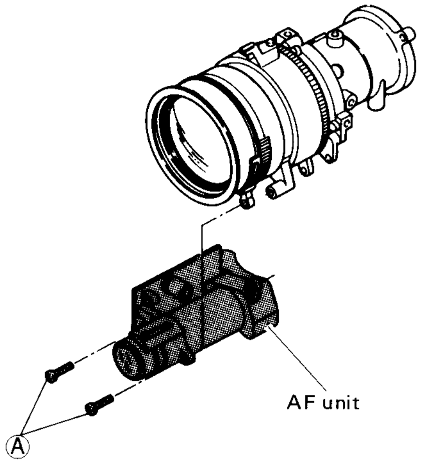


Fig. 1-5-15 AF unit

1. Remove the screws Ⓐ and detach the AF unit from the lens unit.

1.5.16 Operation unit & shoe bracket

Note: *Make sure to remove the operation unit and shoe bracket before disassembling the deck section.*

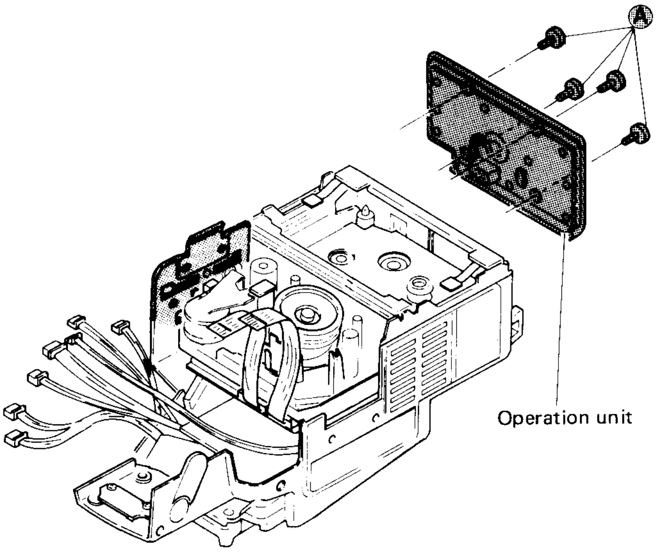


Fig. 1-5-16 Operation unit and shoe bracket

1. Remove the screws Ⓐ and take off the operation unit.
2. The shoe bracket can be removed easily by twisting the lower case in the direction of the arrow mark.

1.5.17 Screws securing the deck section

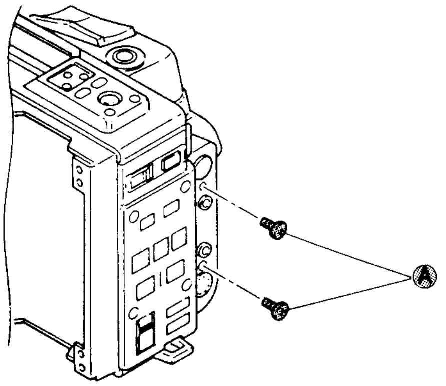


Fig. 1-5-17 Screws securing deck section

1. Remove the screws Ⓐ which secure the deck section at the lower part of the respective plugs of the A/V input connector.

1.6 DECK SECTION

1. Remove the screws Ⓐ, Ⓑ, Ⓒ and Ⓓ.
2. Disconnect the connectors Ⓔ and Ⓕ.
   Lift the deck section by the part near the cassette housing upward, then gently draw it out in the direction of the arrow mark.

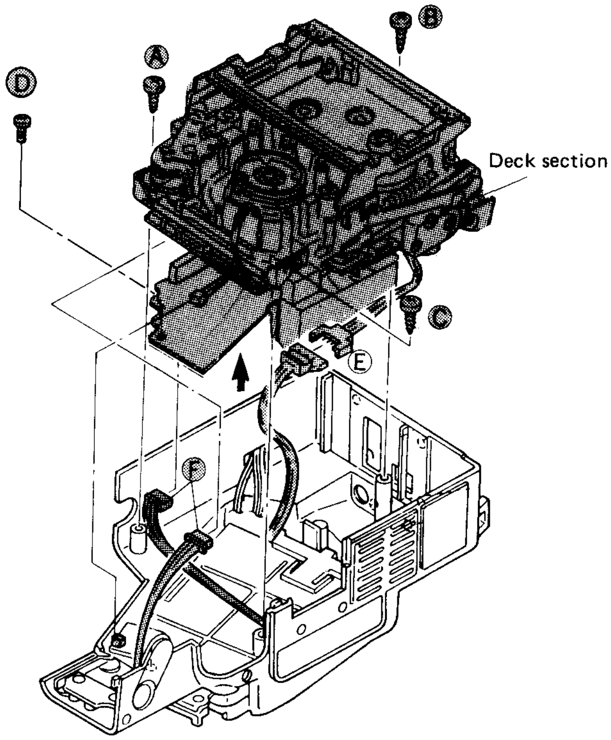

Ⓑ
Ⓐ
Ⓓ
Deck section
Ⓒ
Ⓔ
Ⓕ

Fig. 1-6-1 Exposured deck section

1.6.1 Setup for troubleshooting and check up of deck section

1. For operating only the deck section disassembled from other units for checkup and troubleshooting, connect patch cords Ⓐ, Ⓑ and Ⓒ, and supply 9.6 V DC to start it.

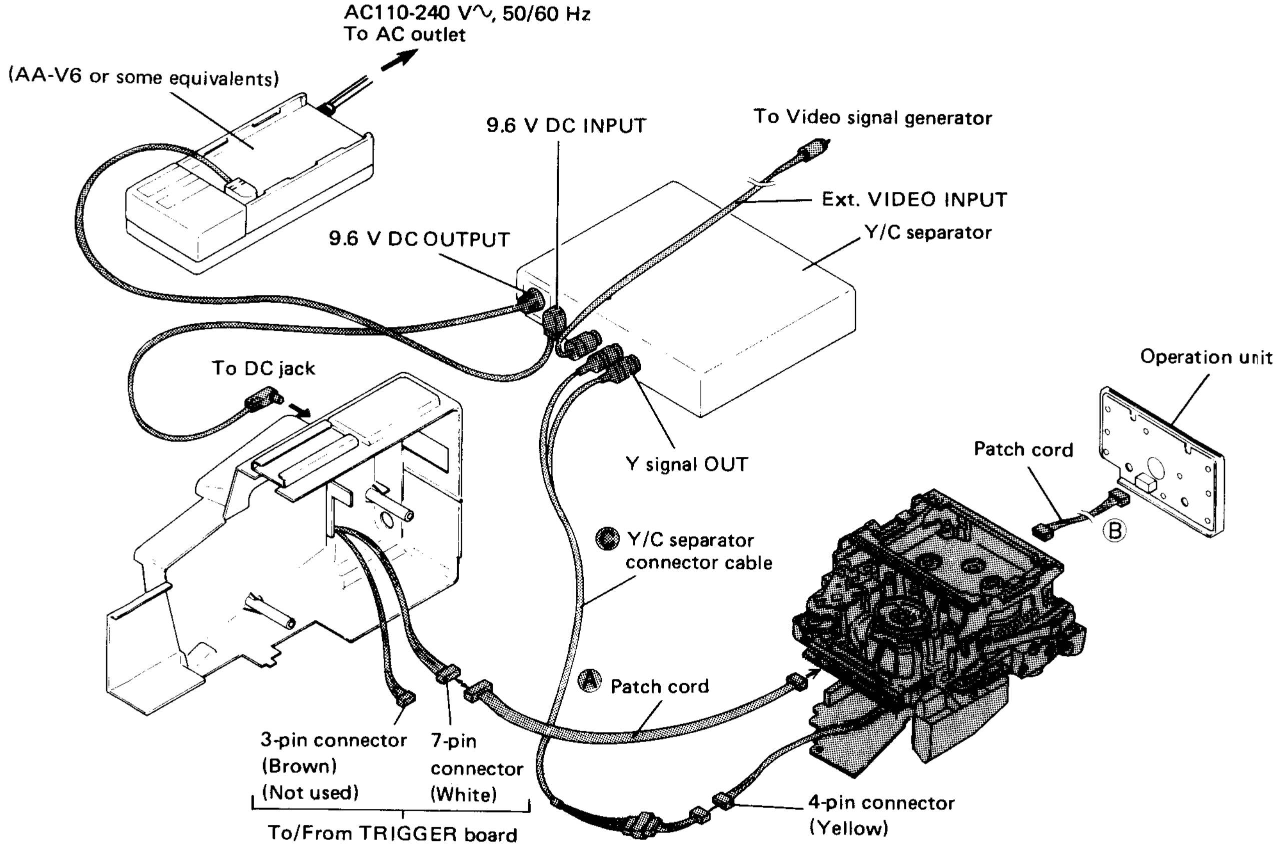

AC110-240 V∿, 50/60 Hz
To AC outlet
(AA-V6 or some equivalents)
9.6 V DC INPUT
To Video signal generator
Ext. VIDEO INPUT
Y/C separator
9.6 V DC OUTPUT
To DC jack
Operation unit
Y signal OUT
Patch cord
Ⓑ
Ⓒ Y/C separator connector cable
Ⓐ Patch cord
3-pin connector (Brown) (Not used)
7-pin connector (White)
To/From TRIGGER board
4-pin connector (Yellow)

Fig. 1-6-2 Stamdard setup for deck section adjustment

1.6.2 Y/C board

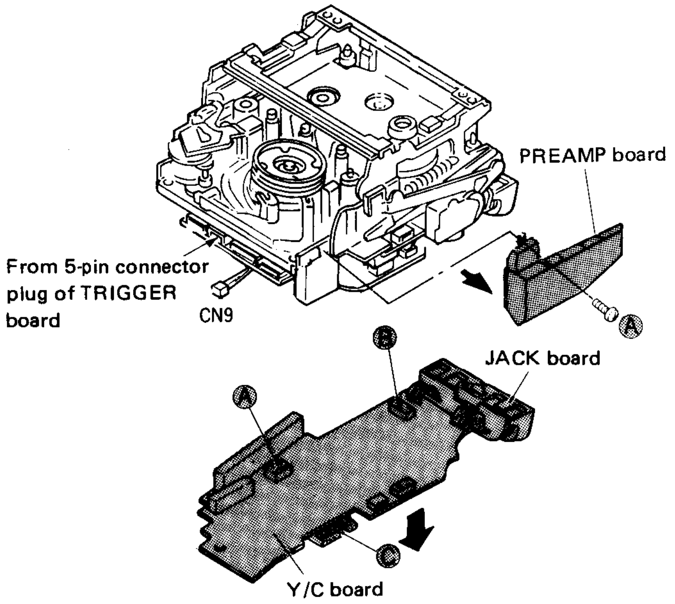

PREAMP board
From 5-pin connector plug of TRIGGER board
CN9
Ⓐ
Ⓑ
JACK board
Ⓐ
Ⓒ
Y/C board

Fig. 1-6-3 Y/C board

1. Remove the screw Ⓐ and draw out the PREAMP board in the direction of the arrow mark to take it off.
2. Disconnect the connectors Ⓐ, Ⓑ and Ⓒ by pulling them in the direction of the arrow mark, then the Y/C board can be taken off.

1.6.3 Sensor board and Cassette housing

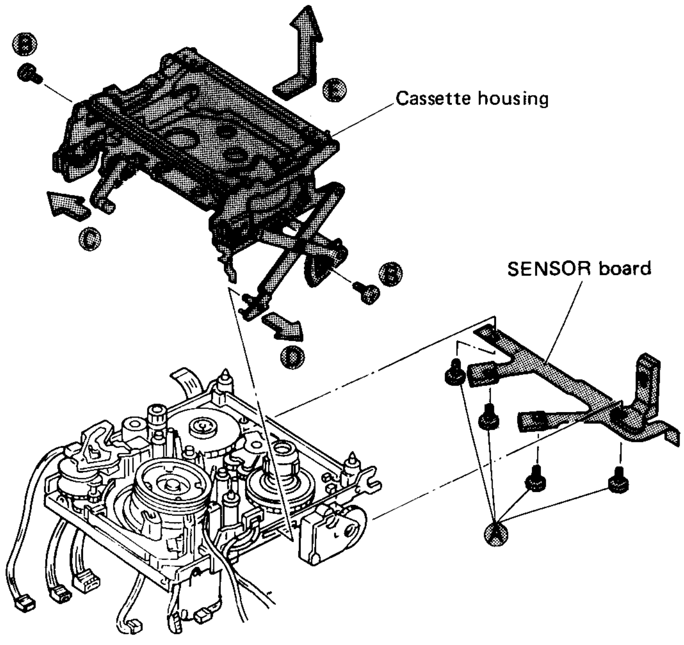

Ⓑ
Ⓔ
Cassette housing
Ⓒ
Ⓑ
SENSOR board
Ⓓ
Ⓐ

Fig. 1-6-4 Cassette housing and sensor board

1. Remove the screws Ⓐ, and take off the sensor board.
2. Remove the screw Ⓑ, and expand the stays of the cassette housing in the directions of Ⓒ and Ⓓ to disengage the rods. Then take off the cassette housing by lifting it in the direction of Ⓔ.

1.6.4 Main board

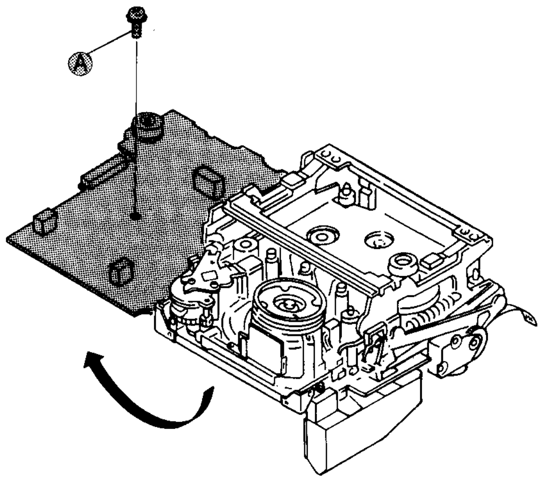


Fig. 1-6-5 Main-3 board

1. Remove the screw Ⓐ and open the MAIN-3 board as indicated by the arrow in the figure.

1.6.5 Replacement of upper drum

1. Unsolder all soldered points of 22 relay pins on the relay board.

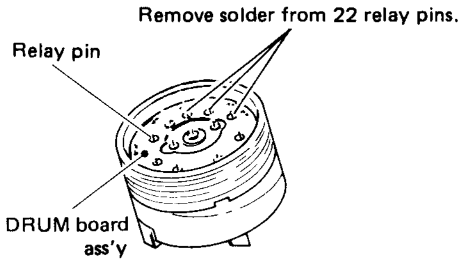

Remove solder from 22 relay pins.
Relay pin
DRUM board ass'y

Fig. 1-6-6 Upper drum assembly

2. Remove two screws from the upper drum.
3. To remove the upper drum, fit it out with a jig provided with a new upper drum and secure them to each other by tightening a screw provided with the jig and the two screws removed once from the drum.

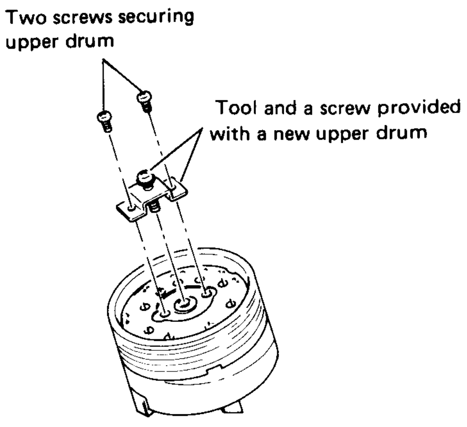

Two screws securing upper drum
Tool and a screw provided with a new upper drum

Fig. 1-6-7 Upper drum ass'y and replacing tool

4. Before installing a new upper drum, insert a soldering iron (50 W) into the hole of the upper drum and heat it for 3–5 minutes to expand the upper drum.

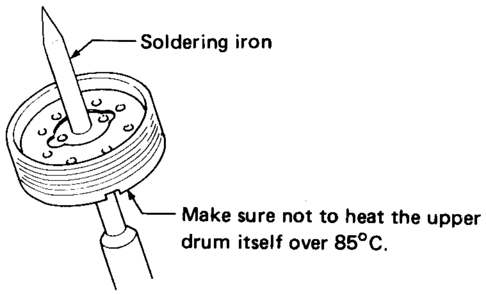

Soldering iron
Make sure not to heat the upper drum itself over 85°C.

Fig. 1-6-8 Upper drum

5. Set the lower drum with the flywheel positioning hole right downward (as viewed in Fig. 1-6-9), and install the upper drum in this condition.

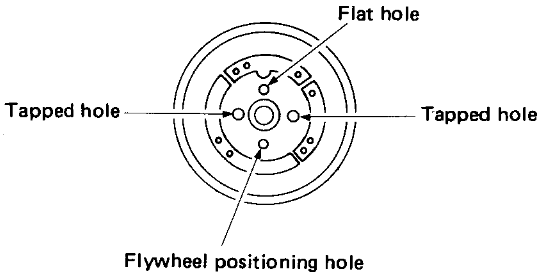

Flat hole
Tapped hole
Tapped hole
Flywheel positioning hole

Fig. 1-6-9 Lower drum

6. Set the upper drum as its red wire terminals face down (as viewed in the figure below) to coincide with the flywheel positioning hole of the lower drum. Then, adjust the position of the upper drum so that the **S** mark sits on the left hand (CH-1 side) (as viewed in the figuer) before fixing the upper drum with screws.

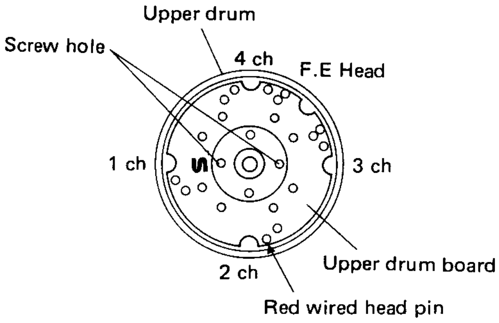

Upper drum
Screw hole
4 ch
F.E Head
1 ch
S
3 ch
2 ch
Upper drum board
Red wired head pin

Fig. 1-6-10 Upper drum assembly

1.6.6 How to replace drum assembly

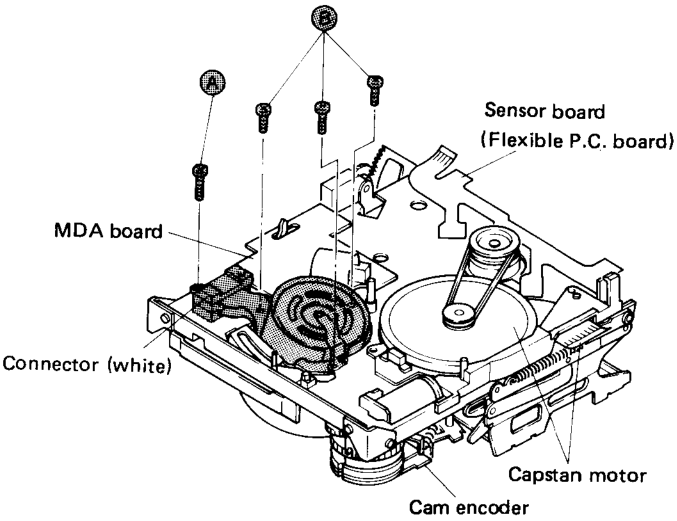

B
A
Sensor board
(Flexible P.C. board)
MDA board
Connector (white)
Capstan motor
Cam encoder

Fig. 1-6-11 Removing of drum assembly-1

1. Remove the screw Ⓐ and disconnect the FPC cable from the connector (white).
2. Remove the screws Ⓑ , then the drum assembly can be detached.

Note: *The brush need not be removed.*
Since the drum assembly is movable after the screws Ⓑ are removed, be the most careful not to damage it.

- Drum assembly detached from the deck section

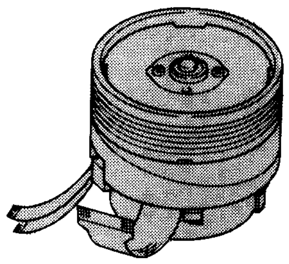


Fig. 1-6-12 Removeing of drum assembly-2

Note: *After replacement of the drum assembly, make sure to perform the servo and interchangeability adjustments.*
Refer to the description of "Deck-2 – Deck-5".

3. After replacement of the apper drum, perform the following adjustment precedences:
- Sec. 2.3 SERVO CIRCUIT & INTERCHANGEABILITY
- Sec. 2.5 2) PB Y level
  3) YNR input level
  4) Video EQ
- Sec. 2.6 2) REC color level
  3) PB color level.

1.6.7 Check and adjustment of phase of mechanism

1. Loading rings

1) In the condition that the worm gear (inside the loading motor bracket ass'y) has been removed, turn the take-up and supply loading rings in the Unloading direction.

2) Assemble the take-up loading ring and supply loading ring so that the hole of the supply loading ring and the V-notch of the take-up loading ring are aligned with the triangle mark of the main deck being viewed from the top.

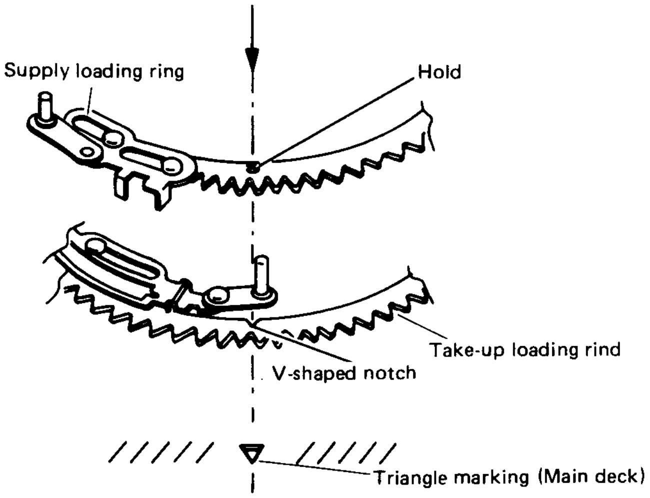

Supply loading ring
Hold
Take-up loading rind
V-shaped notch
Triangle marking (Main deck)

Fig. 1-6-13 Phase of loading ring-1

Note: *Regarding correlative position of the pole base ass'y and ▲ mark of the guide rail*

- Set the unit into the Stop mode, and move the supply guide roller and take-up guide roller close to each other by fingers (this applies to back-lash adjustment of the rings). At this time, confirm that an edge of the pole base (even if a little part) overlaps on ▲ mark.

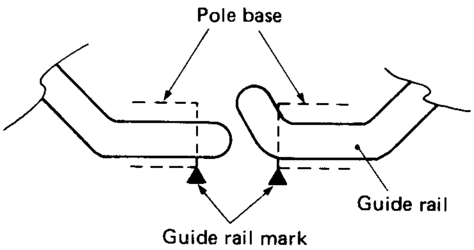

Pole base
Guide rail
Guide rail mark

Fig. 1-6-14 Phase of loading-2

2. Middle pole

1) Move the middle pole in the direction of the arrow Ⓐ.

2) Set the arm gear positioning its shaft Ⓓ aligns with the positioning hole Ⓒ and the middle pole's shaft Ⓔ in a line as shown in the figure.

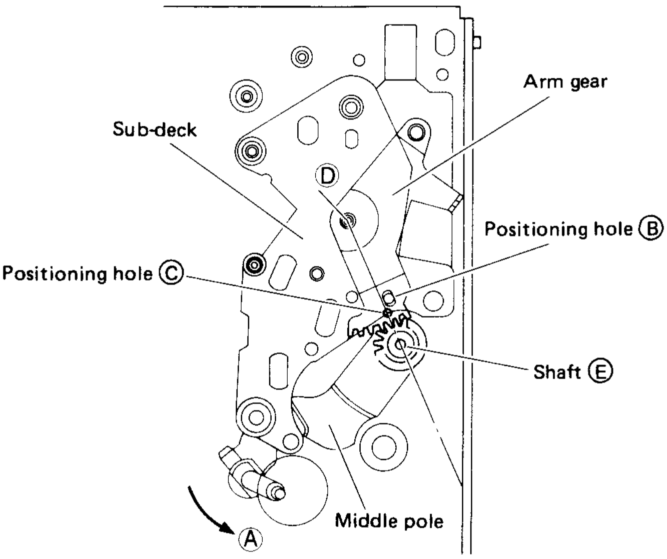

Arm gear
Sub-deck
D
Positioning hole Ⓑ
Positioning hole Ⓒ
Shaft Ⓔ
Middle pole
A

Fig. 1-6-15 Phase adjustment of middle pole

3. Control cam

Set the control cam (gear) as its marking is positioned in a straight line which connects the centers of its shaft and the terminal gear.

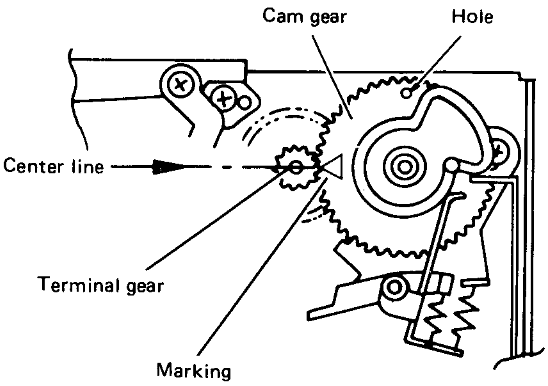

Cam gear
Hole
Center line
Terminal gear
Marking

Fig. 1-6-16 Phase adjustment of control cam

4. Mode control switch

Confirm that, in the Stop mode, the mode control switch has such the positional relation with others.

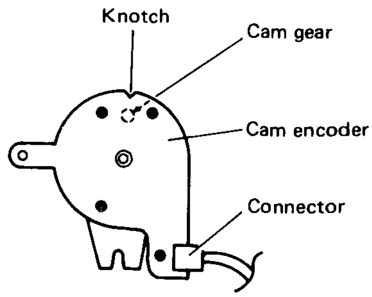

Knotch
Cam gear
Cam encoder
Connector

Fig. 1-6-17 Phase adjustment of mode control switch

1.7 INSPECTION AND MAINTENANCE

Since this model is equipped with rotary parts and consumptive parts which wear away as time passes, it is important to clean the tape transport system and rotary parts as well as to apply oil and grease to them in order to make full use of its real capacity for a long time.

Besides such the simple maintenance work, it needs to replace wearing parts periodically.

1.7.1 Standard servicing schedule for main components

The following table indicates the standard servicing period by kind of servicing such as cleaning, oiling, replacing, etc. In practice, the indicated periods will widely vary according to environmental and using conditions, but it is plain that nonfulfillment of the maintenance work not only shortens the specific period of every item sharply but also influences other components badly.

Also be aware that rubber parts may possibly deform and age as time passes even when the set is not used.

System	Symbol No.	Parts Name	Ass'y	Periodic servicing schedule (operation hours)								
				250	500	750	1000	1250	1500	1750	2000	3000
Tape Transport system	21	Impedance roller		★	★	★	★	★	★	★	★	★
	18	Supply slant pole	a									
	19	Supply guide roller	a									
	20	Tension pole	a									
	7	Middle pole	a									
	6	Take-up guide pole A	a									
	3	Take-up guide pole B	a									
	9	Take-up guide roller	a									
	10	Take-up slant pole	a									
	8	Capstan	a									
	2	Lower drum	a									
	1	Upper drum	a	★	★	☆	●	★	★	☆	●	●
	4	A/C head	a	★	★	★	★	★	★	★	★	●
	5	Pinch roller	a	★	★	★	★	★	★	★	★	●
Drive system	23	Capstan motor	a								●	
	22	Belt					○				●	○
	24	Mode control motor										●
	12	Take-up clutch gear	a	△	△	△	▲	△	△	△	▲	▲
	15	Supply reel disk	a	△	△	△	▲	△	△	△	▲	▲
	14	Center pulley	a				○				○	○
	13	Search brake lever		★	☆	★	☆	★	☆	★	☆	☆
	11	Take-up brake lever		★	★	★	☆	★	★	★	☆	☆
Others	16	Dumper					○				○	●
	17	Tension band	a				○				○	○
	25	Brush					○				○	○

★ : Cleaning

☆ : Cleaning (or Replacement if necessary)

△ : Lubrication

a : Will be provided as assembly parts for replacement

▲ : Lubrication (or Replacement if necessary)

● : Replacement

○ : Inspection or Replacement if necessary

Table 1-7-1 Maintenance schedule

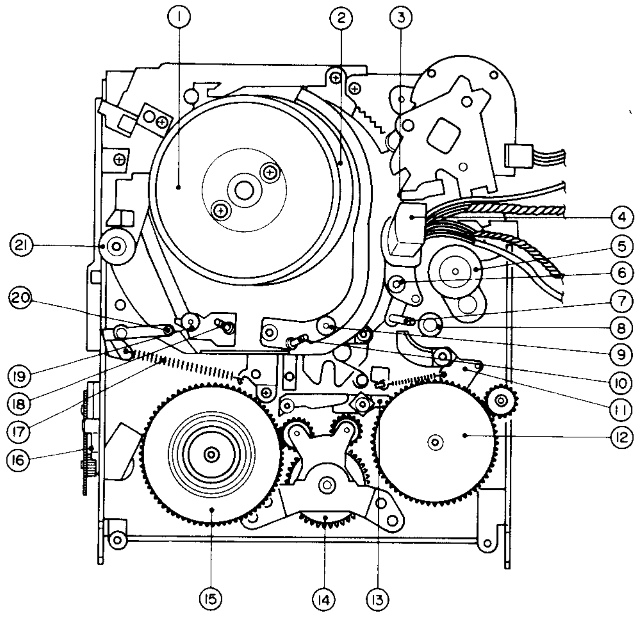


Fig. 1-7-1 Location of main mechanism parts (Top view)

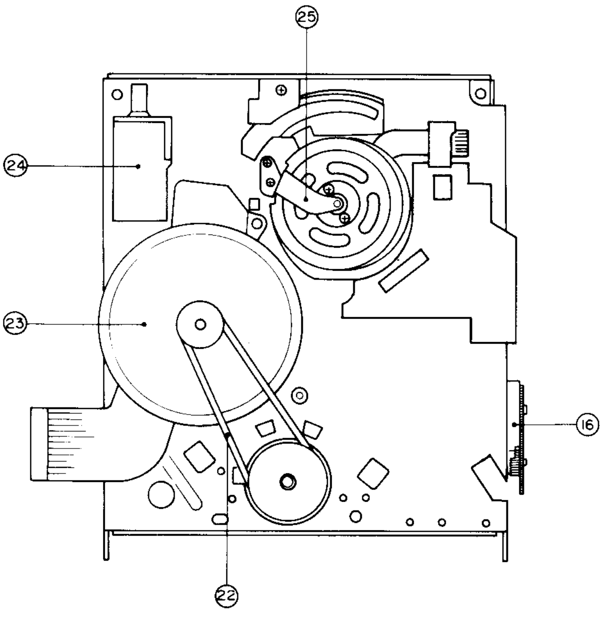


Fig. 1-7-2 Location of main mechanism parts (Bottom view)

1.7.2 Remarks

1. Cleaning

1) For cleaning of the upper drum (particularly video heads) use fine-woven cotton cloth or Kimwipe which alcohol soaks through. Regarding cleaning manner, do not move the cloth but turn the upper drum counterclockwise.

   Note: *Make sure not to move the cloth in the vertical direction to the video head, since it causes damage of the video heads.*

2) For cleaning of parts of the tape transport system except the upper drum, use fine-woven cotton cloth or cotton stick in which alcohol soaks.

3) For cleaning of the search brake lever and take-up brake lever, take off the take-up clutch gear first, and then clean them with cotton stick soaked with alcohol.

4) Before loading the deck with cassette tape, confirm that the cleaned parts are completely dry.

2. Applying oil and grease

1) For parts and points to apply oil and grease, refer to the exploded views of the mechanism assembly.
   Table 1-7-2 specifies oil and grease to be used.

2) When oiling, clean the objective parts first and then apply one or two drop(s) of oil. Too much oiling causes rotary parts to slip because of oil leakage.

Classification	Name	Parts No.	Symbol in drawing
Grease	Moriton Grease No.1	MOS2-C	A
Oil	Cosmo Hydro HV100	YTU94027	B

Table 1-7-2 Specific oil and grease to be used

3. Checkup

After replacement of the supply reel disk and tension band, make sure to inspect and adjust back tension according to the adjustment procedure of the deck section.

4. Replacement

For replacement parts which are supplied as assembly parts, they are indicated by "a" in the "Ass'y" column of the Table 1-7-1.

For their parts numbers, refer to the parts list of the mechanism assembly parts.

SECTION 2
DECK SECTION ADJUSTMENT

2.1 PREPARATION

2.1.1 Precautions

In most cases the deck section is in need of electrical adjustment, it results from replacement of worm mechanical parts or video heads.

In the event of malfunction with electrical circuits, troubleshooting with the aid of proper test instruments must be done first, and then commence necessary repair, replacement and adjustment, etc.

At field servicing without a complete range of test instruments, avoid unnecessary disturbance of the internal control settings. For satisfactory repair and adjustment, send back the unit to the factory or the nearest authorized service center.

If adjustment of the deck section is necessary, pay the most careful attention to the following:

1. When loading the deck with a VHS-C cassette, make sure to remove the cassette door since it contacts with the drum as it is.
2. In case of wiring to chip test points for measurement and observation, use IC clips to avoid any stress.
3. For adjustment of the Y/C circuits equipped with trimming resistors, replace them with specified V. resistors beforehand.

2.1.2 Standard connections

For electrical adjustment of the deck section, disassemble the deck section from the main body referring to section 1, "Disassembly of Deck Section" and connect it and test instruments as shown in Fig. 2-1-1.

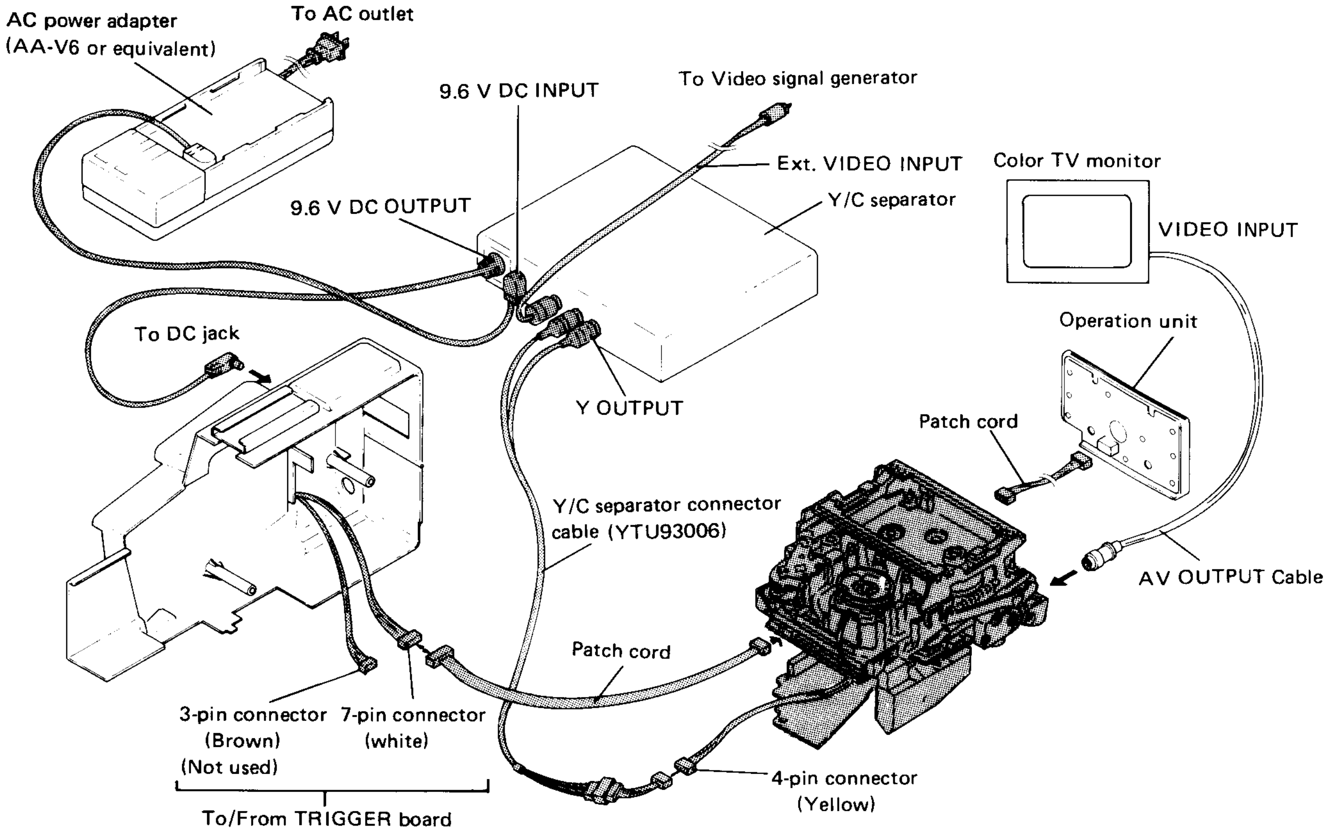

AC power adapter
(AA-V6 or equivalent)
To AC outlet
9.6 V DC INPUT
To Video signal generator
Ext. VIDEO INPUT
Color TV monitor
Y/C separator
VIDEO INPUT
9.6 V DC OUTPUT
To DC jack
Operation unit
Y OUTPUT
Patch cord
Y/C separator connector cable (YTU93006)
AV OUTPUT Cable
Patch cord
3-pin connector (Brown) (Not used)
7-pin connector (white)
To/From TRIGGER board
4-pin connector (Yellow)

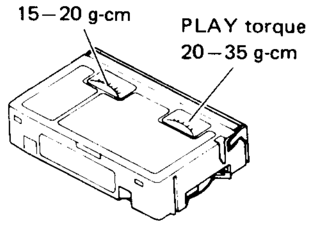
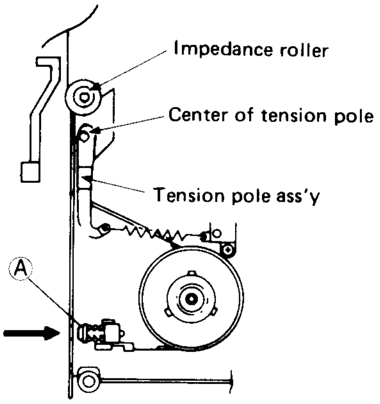
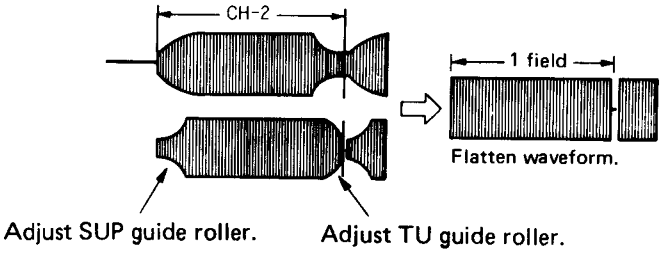
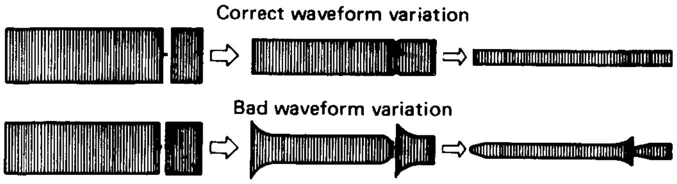
Fig. 2-1-1 Standard setup for deck section adjustment

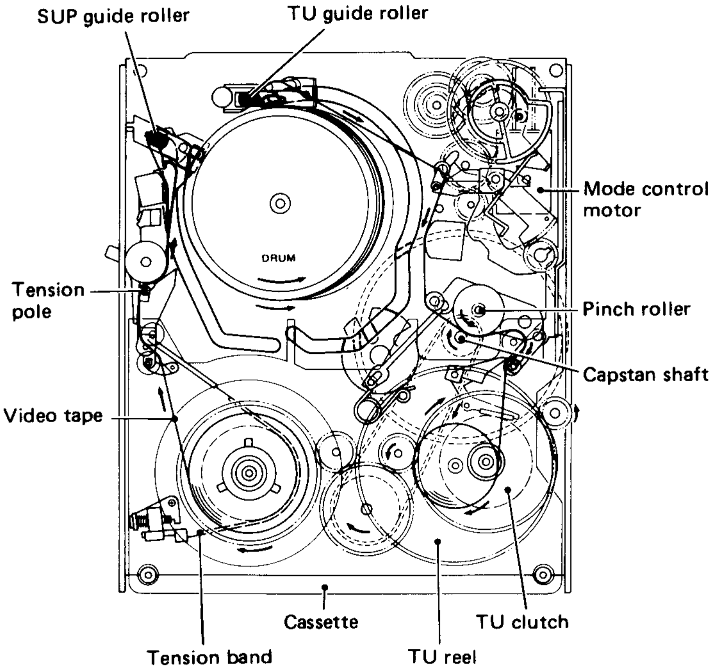
2.2 REGULATOR CIRCUIT ([0] [1] MAIN-3 board)

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
1	REG 8 V	• REC	• TP3 (REG 8 V) [0] [1] MAIN-3	• R4 (REG 8 V) [0] [1] MAIN-3	1) Connect a DC voltmeter between TP3 and TP5 (GND), and adjust R4 so that the voltmeter reads 8 ± 0.2 V DC.

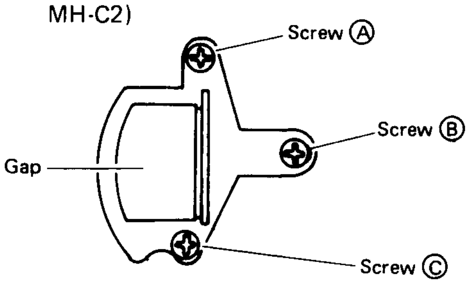
2.3 SERVO CIRCUIT & INTERCHANGEABILITY

Note: *This adjustment must be performed after replacement of the upper drum assy or/and the lower drum assy.*

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
1	Back tension	• Cassette torque meter • REC	• Cassette torque meter  **Fig. 2-3-1** Cassette torque meter  Impedance roller Center of tension pole Tension pole ass'y Ⓐ Adjust this. **Fig. 2-3-2** Correlative positions of tension pole and impedance roller	• Screw Ⓐ	1) Set a cassette torque meter into the deck in the mode of REC, and adjust the screw Ⓐ so that back tension becomes 15–20 g-cm. At the same time, confirm that play torque is 20–35 g-cm. 2) Set the beginning portion of a EC-30 cassette tape to REC mode. Notes: • *Confirm that the tension pole does not contact with the chassis at the beginning of the tape and the impedance roller rotates at the end of the tape.* • *If results of the adjustment in the steps 1) and/or 2) are unsatisfactory, replace the tension band.* *If there is big changes in the values measured by the cassette torque meter, replace the supply reel disk.*
2	Tape pattern	• Alignment tape Stairstep (MHPE-C or MH-C2)	• TP109 (PB FM OUT) • TP111 (DRUM FF IN) (Ext. trigger) [0] [2] Y/C  CH-2 1 field Flatten waveform. Adjust SUP guide roller. Adjust TU guide roller. **Fig. 2-3-3** FM waveform  **Fig. 2-3-4** FM waveform	• SUP & TU guide rollers	1) Observe waveform at TP109 with external trigger (+) of TP111. 2) Play the alignment tape and maximize the FM waveform by the TRACKING control. control. 3) If the FM waveform is not flat, adjust the supply and take-up guide rollers with a 1.5 mm hex. wrench. Note: *To prevent the tape from damage, turn the guide rollers slowly.* 4) By turning the TRACKING control, vary the FM waveform output from maximum to minimum (and vice versa) gradually, and confirm that the variation proceeds in a flat shape. (Fig. 2-3-4). 5) If the FM waveform breaks in the varying process, adjust height of guide roller(s) subtly every breaking so that variation proceeds as flat as possible. Repeat the steps 4) and 5) to find a shape of flat variation.

<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Item</th><th rowspan="2">Mode & Signal</th><th>Test Point</th><th>Adjustment Parts</th><th rowspan="2">Procedure</th></tr>
<tr><th colspan="2">Waveform & Adjustment</th></tr>
<tr><td rowspan="2"></td><td></td><td>• REC then PB</td><td></td><td></td><td rowspan="2">6) After the above steps, set the mode to STOP once and then to PB again for final checkup since the positions of the guide rollers change in the course of adjustment.
7) Play the stairstep signal of alignment tape to confirm no abnormality.
8) Record the signal and play it back modes respectively to confirm that there is anything abnormal.
9) Through the above steps, confirm that the occurs no wrinkling and damage in the tape around the impedance roller and TU side guide pole whenever the deck is in operation of Loading/Unloading, Search Rewind, and at mode change from Search Rewind to Play mode. If wrinkling or damage in the tape occurs around the TU guide pole, adjust the angle (slant) of the A/C head to the tape so that the tape normally runs along the lower flange of the guide pole.</td></tr>
<tr><td colspan="4">

SUP guide roller
TU guide roller
DRUM
Mode control motor
Tension pole
Pinch roller
Capstan shaft
Video tape
Cassette
TU clutch
Tension band
TU reel

Fig. 2-3-5 Tape transport system</td></tr>
<tr><td rowspan="2">3</td><td>A/CTL head height & azimuth</td><td>•Alignment tape (Audio 6 kHz) (MHPE-C or MH-C2)</td><td>• LINE OUT (A/V cable OUT)</td><td>• A/C head</td><td rowspan="2">1) Play the stairstep signal (audio 6 kHz) of alignment tape and observe the waveform at LINE OUT terminal.
Note: *If the output level is about –6 dBs (1.1 Vp-p), it is normal.*
2) If necessary, slightly and evenly turn the screws Ⓐ (reference), Ⓑ (slant to the front) and Ⓒ (azimuth) in the same direction .(up to 45° each) to obtain the maximum output level.
3) For fine adjustment, use the screw Ⓑ to decrease the waveform fluctuation in level while use the screw Ⓒ to obtain the maximum output level.</td></tr>
<tr><td colspan="4">

Screw Ⓐ
Screw Ⓑ
Gap
Screw Ⓒ

Fig. 2-3-6 A/C head

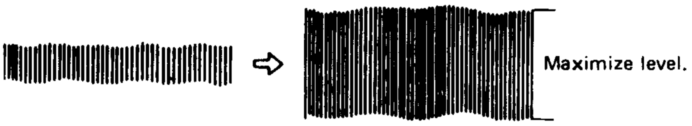
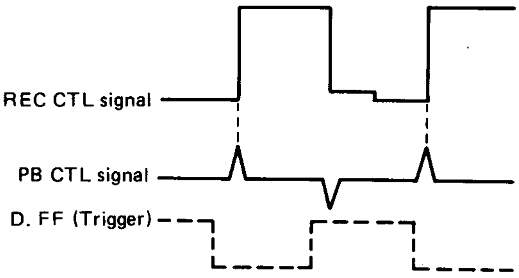
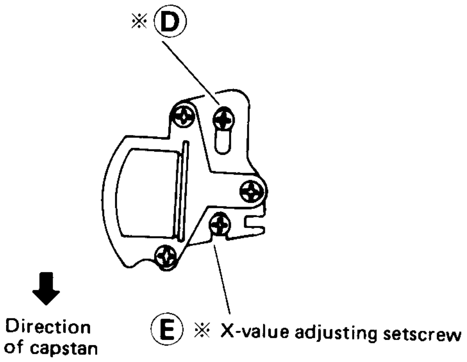
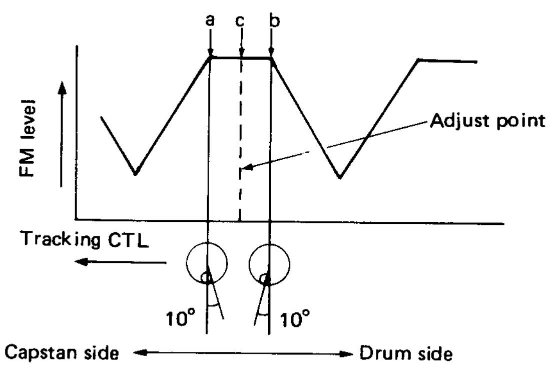
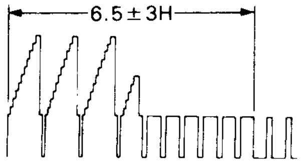



Fig. 2-3-7 Audio signal</td></tr>
</table>

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
4	Tracking preset	• REC then PB • TRACKING control: Center	• TP108 (PB CTL PULSE) 0 1 MAIN-3 • TP111 (DRUM FF IN) (Ext. trigger) 0 2 Y/C  **Fig. 2-3-8** Tracking preset	• R103 (TRACKING PRESET) 0 1 MAIN-3	1) Set the mode to REC. 2) Observe waveform at TP108 with extenal trigger (–) of TP111. 3) Take note of the rise point of TP108 waveform. 4) Set the TRACKING control to the center position. 5) Play back the recorded section and adjust R103 so that the positive pulse of TP108 waveform coincides with the rise point in the recording. 6) Again record and play back mode, and confirm that time lag between the positive pulse of TP108 waveform and the rise point in recording is within ± 0.5 msec.
5	Phase of CTL head (X value	• Alignment tape Stairstep (MHPE-C or MH-C2) • TRACKING control: Center	• TP109 (PB FM OUT) • TP111 (DRUM FF IN) (Ext. trigger) 0 2 Y/C  ※Ⓓ Direction of capstan Ⓔ ※ X-value adjusting setscrew **Fig. 2-3-9** CTL head phase  **Fig. 2-3-10** Adjusting point of CTL head phase	• CTL head	1) Observe waveform at TP109 with external trigger (+) of TP111. 2) Play alignment tape. 3) While turing the Tracking CTL, confirm the following matter. When the Tracking CTL is center click position, FM level should be maximum. When turning it to the left or right within about 10°, FM level maintain maximum, and when turning more than 10°, FM level starts to fall. 4) If item 3) is not satisfied, the adjustment must be performed. Slightly loosen screws Ⓓ and Ⓔ and put the A/C head fully in the direction of the capstan and then, gradually move the A/C head to the direction of the drum side and find out the point "c" to get the correct control head phase. 5) Fasten screw Ⓓ and Ⓔ . Confirm step 3). 6) If possible, perform recording. Play that tape in the deck VCR and make sure that interchangeability is normal.

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
6	LP CTL head phase fine adjustment	• MHPE-LC •TRACKING contorl: Center	•TP109 (TP FM) •TP111 (DRUM FF) (Ext. trigger) $\boxed{0}\boxed{1}$ MAIN-3	•R106 (LP CTL DELAY) $\boxed{0}\boxed{1}$ MAIN-3	1) Observe waveform at TP109 with external trigger (–) of TP111. 2) Set the TRACKING control to the center position. 3) Adjust R106 so that FM waveform level becomes maximum.
7	PB switching point	• Alignment tape Stairstep (MHPE-C or MH-C2)	• TP19 (VIDEO OUT) • TP111 (DRUM FF IN) (Ext. trigger) $\boxed{0}\boxed{2}$ Y/C  Fig. 2-3-11 PB switching point	• R108 (PB SW POINT) $\boxed{0}\boxed{1}$ MAIN-3	1) Observe waveform at TP19 with external trigger pulse (–) of TP111. 2) Adjust R108 so that trigger point is observed 6.5 H before V. sync. signal.

2.4 Y/C CIRCUIT

2.4.1 Pre-amp circuit

Note: *This adjustment should be performed only when self-recording picture has flicker and B/W reversal after replacing the upper drum or Pre-amp board. It is necessary to correct each head characteristic obtain the optimum picture quality.*

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
1	Video Head Resonance /Fo	•PLAY •Jump wire	•CN4 pin 3 (TP FM) [0] [3] PRE AMP	• Separate chart	1) Short circuit pin 2 to pin 1 (GND) of CN13 on the MAIN board to select Emergency Off mode. 2) Supply a sweep signal with 1 MHz and 7.3 MHz markers from Sweep Generator to "A" on the PRE AMP board with a 1.2 kOhm resister. **Note:** *"A"; Refer to the table for each head adjustment.* 3) Set for play mode without tape. 4) Connect the oscilloscope to pin 3 of CN4 on the PRE AMP board with external trigger from the Sweep Generator V. SYNC output terminal. Adjust the sweep generator gain so that pin 3 of CN4 waveform does not distort. **Note:** *As the drum rotates without lock, the waveform on the oscilloscope may wane sometimes.* 5) Adjust "B" to set the resonance point to 7.3 MHz. 6) Adjust "C", 7.3 MHz (b) level is double 1 MHz level (a) as shown in Fig. 2-4-1. 7) Repeat step 2) and 6) for each channels accoring to table. 8) If necessary, adjust Q ratio to that of the least effeciant channel to equal each channel characteristic.

Channel	"A"	"B"	"C"
1	Pin 3 of CN2	VC2	VR2
2	Pin 7 of CN2	VC4	VR4
3	Pin 1 of CN2	VC1	VR1
4	Pin 5 of CN2	VC3	VR3

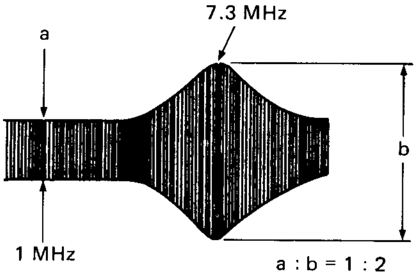


Fig. 2-4-1 Video Head Resonance/Fo

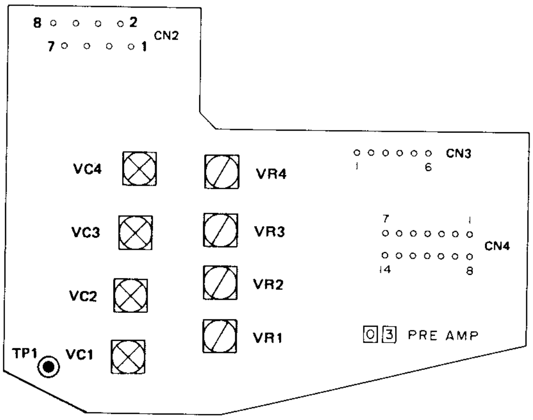
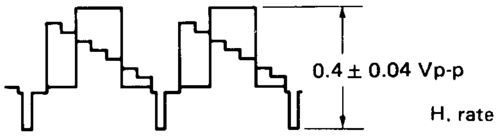
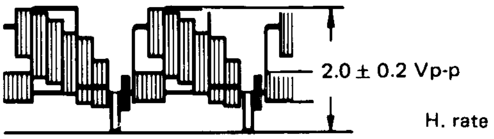
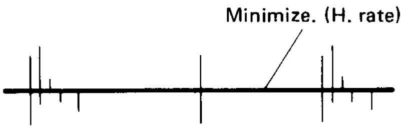
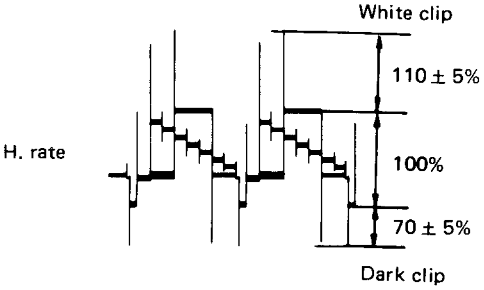
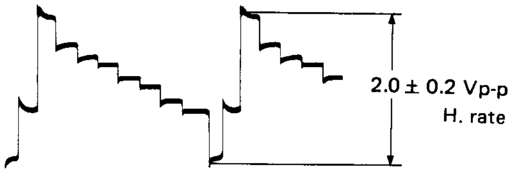


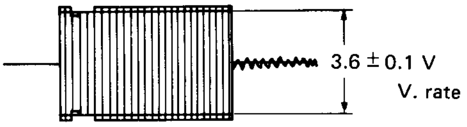
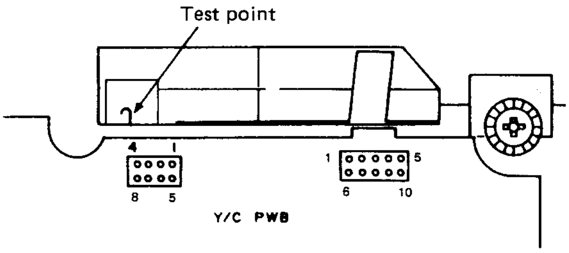
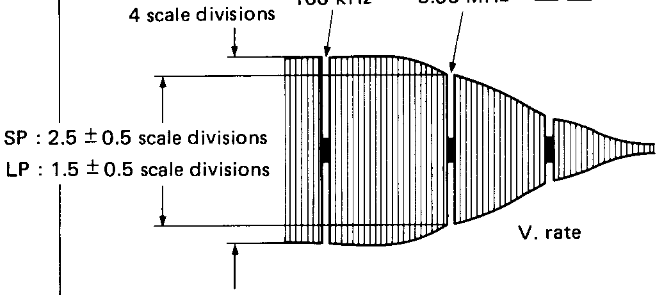
Fig. 2-4-2 PRE AMP board location

2.4.2 S (Super) Y signal circuit

Note: *Before proceeding to do the following adjustment, make sure of the normal value or setting of the item in the S-VHS mode.*

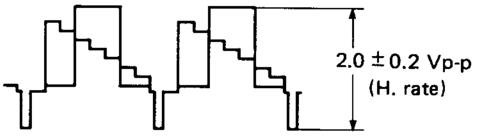
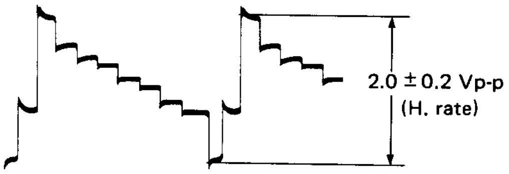
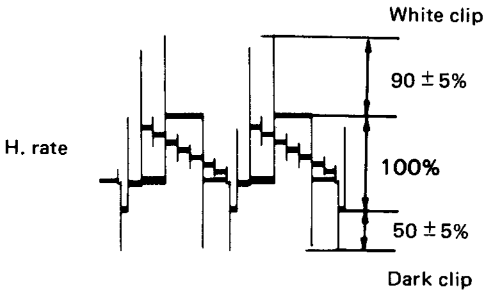
No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
1	Non-linear emphasis input level	• This circuit uses fixed resistor, if IC2 replaced, these may require replacement with variable resistor to allow adjustment. • Color bar input • EE	• TP2 (NL EMPHASIS IN LEVEL) $\boxed{0}\boxed{2}$ Y/C  **Fig. 2-4-3** S non-linear emphasis input level	• R415 (NL EMPHASIS INPUT LEVEL) $\boxed{0}\boxed{2}$ Y/C	1) Confirm that signal level at TP2 is 0.4 Vp-p. 2) If necessary, replace R415 with a V. resistor NVP1301-152N and adjust it for 0.4 Vp-p.
2	PB Y level	• Alignment tape Color bar (MHVE-2HC or MH-C2H) • VIDEO OUT SW: Y/C	• TP19 (VIDEO OUT LEVEL) $\boxed{0}\boxed{2}$ Y/C  **Fig. 2-4-4** S PB Y level	• R414 (S PB Y LEVEL) $\boxed{0}\boxed{2}$ Y/C	1) Adjust R414 so that signal level becomes 2.0 Vp-p.
3	Y NR input level	• Alignment tape Color bar (MHVE-2HC or MH-C2H)	• TP27 (Y NR MS INPUT LEVEL $\boxed{0}\boxed{2}$ Y/C  **Fig. 2-4-5** Y NR input level	• R406 (Y NR SUB S INPUT LEVEL) $\boxed{0}\boxed{2}$ Y/C	1) Play the color bar signal of the Alignment tape. 2) Adjust R406 so that average level of the waveform becomes minimum.

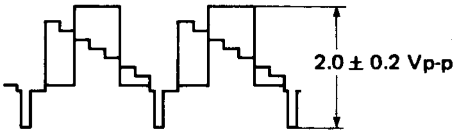
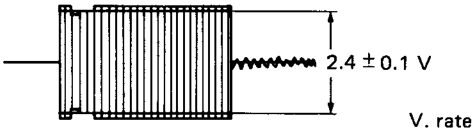
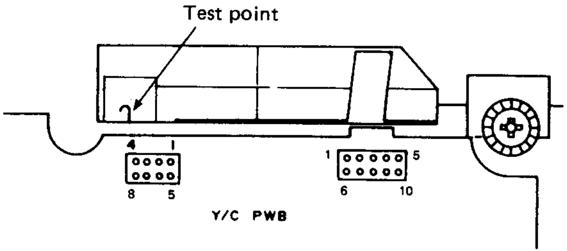
No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
4	White & Dark clip	• This circuit uses fixed resistor, if IC1 replaced, these may require replacement with variable resistor to allow adjustment.			
		• Color bar input • REC	• TP4 (MAIN EMPHASIS OUT LEVEL) [0][2] Y/C	• R402 (S DARK CLIP) • R405 (S WHITE CLIP) [0][2] Y/C	1) Confirm that white clip of TP4 signal is 110 ± 5%. 2) If not, replace R402 with a semi-fixed resistor NVP1301-103N and adjust it to obtain the specified level. 3) Confirm that dark clip of TP4 signal is 70 ± 5%. 4) If not, replace R405 with a semi-fixed resistor NVP1301-222N and adjust it to obtain the specified level.
			 White clip 110 ± 5% H. rate 100% 70 ± 5% Dark clip **Fig. 2-4-6** S white/dark clip		
5	Carrier & deviation	• This circuit uses fixed resistor, if IC1 replaced, these may require replacement with variable resistor to allow adjustment.			
		• No input signal • REC	• TP5 (REC FM OUT LEVEL) [0][2] Y/C	• R409 (S CARRIER) [0][2] Y/C	**Note:** *This adjustment should be performed only, when EE and playback of pre-recorded tape are normal, while the sync at self-recording is distorted (poor carrier set) or S/N is extremely poor. (poor deviation).*
		• Color bar input • REC & PB • VIDEO OUT SWITCH: Y/C	• TP19 (VIDEO OUT) [0][2] Y/C	• R408 (S. DEVIATION) [0][2] Y/C	1) Connect a frequency counter to TP5 and confirm that the frequency is 5.4 MHz ± 50 kHz. 2) If necessary, replace R409 with a semi-fixed resistor NVP1301-203N and adjust it to obtain the specified value. 3) Record the color bars signal and play it back to confirm that Y signal level at TP19 is 2.0 Vp-p. 4) If necessary, replace R408 with a semi-fixed resistor NVP1301-622N and adjust it to obtain the specified level.
					

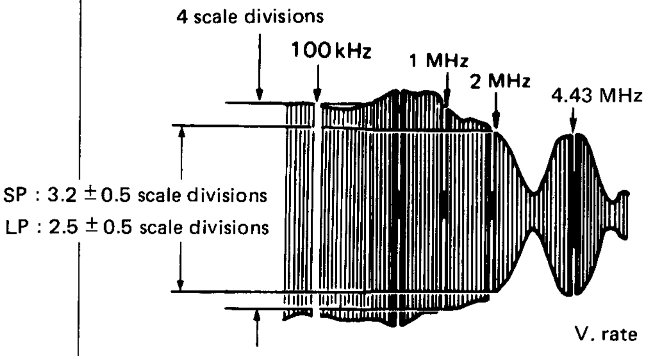
No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
6	REC FM level	• Color bar input • SP REC	• Test pin of pre-amp. 0 4 PRE-AMP • TP111 (DRUM FF) (Ext. trigger) 0 1 MAIN-3  3.6 ±0.1 V V. rate Fig. 2-4-8 S REC FM level  Test point 4 1 8 5 1 5 6 10 Y/C PWB Fig. 2-4-9 Pre-amp test pin	• R412 (N REC FM) 0 2 Y/C	1) Observe waveform at the HEAD terminal with external trigger pulse (−) of TP111 on the MAIN-3 board. 2) Adjust R412 to obtain 3.6 V as the FM level in the pedestal portion.
7	PB RF EQ	• Color sweep • REC & PB • VIDEO OUT SW: Y/C	• TP19 (VIDEO OUT LEVEL) 0 2 Y/C  4 scale divisions 100 kHz 3.93 MHz SP : 2.5 ±0.5 scale divisions LP : 1.5 ±0.5 scale divisions V. rate Fig. 2-4-10 S PB RF equalizer	• R419 (SP) (S VIDEO RF EQ) • R418 (LP) (S VIDEO RF EQ) 0 2 Y/C	1) Supply the sweep signal to pin 2 of CN6. 2) Record this signal and play the same portion. 3) In the case the sweeper's 100 kHz marker frequency (start) is for 4 scale divisions on the oscilloscope screen, adjust R419 so that 3.93 MHz marker level becomes 2.5 scale divisions. 4) Record the sweep signal in LP mode and play the same portion. 5) In the same manner as the step 2) for SP, adjust R418 so that 3.93 MHz marker level is for 1.5 scale divisions. **Note:** ***Record a high contrast object in the SP and LP mode. While observing the playback picture, confirm that there is no B/W reversal and picture is sharp.***

2.4.3 Conventional Y signal circuit

Note: *Before proceeding to do the following adjustment, make sure of the normal value or setting of the item in the Conventional mode.*

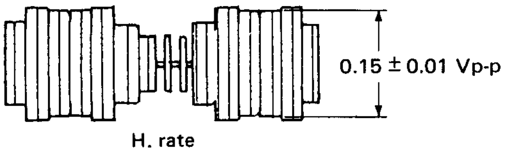
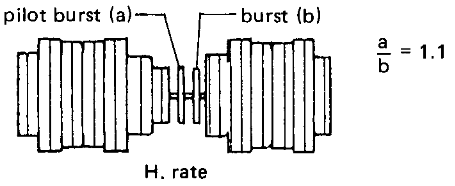
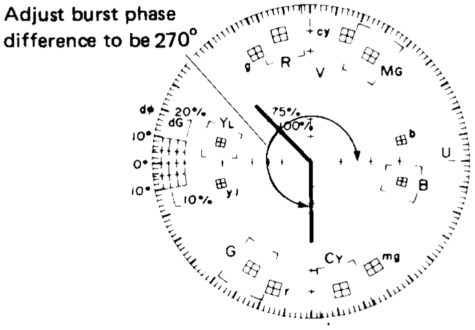
No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
1	EE Y level	• This circuit uses fixed resistor, if IC1 replaced, these may require replacement with variable reslstor to allow adjustment.			
		• Color bar input • EE • VIDEO OUT SW: Y/C	• TP19 (VIDEO OUT) $\boxed{0}\boxed{2}$ Y/C	• R401 (EE Y LEVEL) $\boxed{0}\boxed{2}$ Y/C	1) Confirm Y level of 2.0 Vp-p at TP19. 2) If necessary, replace R401 with a V. resistor NVP1301-123N and adjust it to obtain 2.0 Vp-p.
			 Fig. 2-4-11 EE Y level		
2	PB Y level	• Alignment tape Color bar (MHVE-2C or MH-C2) • VIDEO OUT SW: Y/C	• TP19 (VIDEO OUT LEVEL) $\boxed{0}\boxed{2}$ Y/C	• R413 (N PB Y LEVEL) $\boxed{0}\boxed{2}$ Y/C	1) Adjust R413 so that signal level becomes 2.0 Vp-p.
			 Fig. 2-4-12 N PB Y level		
3	White & Dark clip	• This circuit uses fixed resistor, if IC1 replaced, these may require replacement with variable resistor to allow adjustment.			
		• Color bar input • REC	• TP4 (MAIN EMPHASIS OUT LEVEL) $\boxed{0}\boxed{2}$ Y/C	• R404 (N WHITE CLIP) • R403 (N DARK CLIP) $\boxed{0}\boxed{2}$ Y/C	1) Confirm that white clip of TP4 signal is 90 ± 5%. 2) If necessary, replace R404 with a V. resistor NVP1301-123N and adjust it for 90% white clip. 3) Confirm that dark clip of TP4 signal is 50 ± 5%. 4) If necessary, replace R403 with a V. resistor NVP1301-102N and adjust it for 50% dark clip.
			 White clip 90 ± 5% H. rate 100% 50 ± 5% Dark clip Fig. 2-4-13 N white/dark clip		

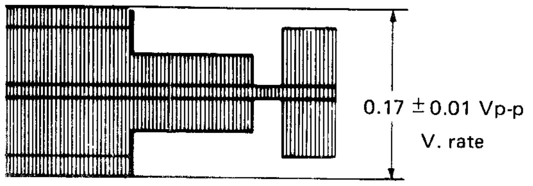
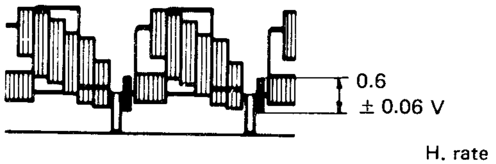
No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
4	Carrier & deviation	• This circuit uses fixed resistor, if IC1 replaced, these may require replacement with variable resistor to allow adjustment.			Note: *This adjustment should be performed only, when EE and playback of pre-recorded tape are normal, while the sync at self-recording is distorted (poor carrier set) or S/N is extremely poor. (poor deviation).*
		• No input signal • REC	• TP5 (REC FM OUT LEVEL) $\boxed{0}\boxed{2}$ Y/C	• R410 (N CARRIER) $\boxed{0}\boxed{2}$ Y/C	1) Connect a frequency counter to TP5 and confirm that the frequency at TP5 is 3.8 MHz ± 50 kHz without input signal. 2) If necessary, replace R410 with a V. resistor NVP1301-333N and adjust it to obtain the specified value.
		• Color bar input • REC & PB • VIDEO OUT SW: Y/C	• TP19 (VIDEO OUT LEVEL) $\boxed{0}\boxed{2}$ Y/C	• R407 (N DEVIATION) $\boxed{0}\boxed{2}$ Y/C	3) Record the color bar signal and play it back to confirm that Y level at TP19 is 2.0 Vp-p. 4) If necessary, replace R407 with a V. resistor NVP1301-782N and adjust it in recording to obtain the specified value. The result must be confirmed in playing it back.
			 Fig. 2-4-14 N PB Y level		
5	REC FM level	• Color bar input • SP REC	• Pre-amp's test pin (CH-A REC FM OUT) $\boxed{0}\boxed{4}$ PRE AMP • TP111 (DRUM FF) (Ext. trigger) $\boxed{0}\boxed{1}$ MAIN-3	• R411 (N REC FM) $\boxed{0}\boxed{2}$ Y/C	1) Observe waveform at the HEAD terminal with external trigger pulse (–) of TP111 on the MAIN-3 board. 2) Adjust R411 to obtain 2.4 V as the FM level in the pedestal portion.
			 Fig. 2-4-15 N REC FM level		
			 Test point 4 1 8 5 1 5 6 10 Y/C PWB Fig. 2-4-16 Pre-amp test pin		

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
6	Video EQ	• Color sweep • REC & PB	• TP19 (VIDEO OUT LEVEL) 0 2 Y/C  **Fig. 2-4-17** N PB RF equalizer	• R416 (SP) (SP N VIDEO RF EQ) • R417 (LP) (LP N VIDEO RF EQ) 0 2 Y/C	1) Record the sweep signal in SP mode and play the same portion. 2) In the case the sweeper's 100 kHz marker frequency (start) is for 4 scale divisions on the oscilloscope screen, adjust R416 so that 2 MHz marker level becomes 3.2 scale divisions. 3) Record the sweep signal in LP mode. 4) In the same manner as the step 2) for the SP mode, adjust R417 so that 2 MHz marker level becomes 2.5 scale divisions. **Note:** *Record a high contrast object in the SP and LP mode.* *While observing the playback picture, confirm that there is no B/W reversal and picture is sharp.*

2.4.4 S (Super) color circuit

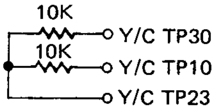
Note: *Before proceeding to do this adjustment in S-VHS mode, confirm that the foregoing steps have been adjusted correctly.*

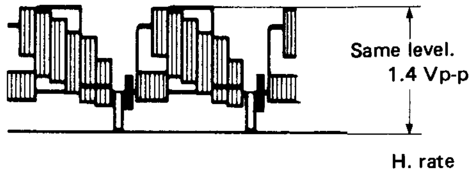
No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
1	4.433619MHz VXO	• Alignment tape Color bar (MHVE-2HC or MH-C2H)	•TP12 (VXO OUT) 0 2 Y/C	•C110 (VXO FREQ EQ) 0 2 Y/C	1) Connect a frequency counter to TP12 and adjust C110 so that the frequency (f) becomes 4.433619 MHz ± 50 Hz.
2	PB color level	• Alignment tape (MHVE-2HC or MH-C2H)	•TP14 (PB COLOR IN LEVEL) 0 2 Y/C  **Fig. 2-4-18** PB color level	•R424 (PB COLOR LEVEL) 0 2 Y/C	1) Observing the oscilloscope, adjust R424 to obtain 0.15 Vp-p at TP14 as the maximum signal level.
3	321 FH VCO	• This circuit uses fixed resistor, if IC8 replaced, these may require replacement with variable resistor to allow adjustment.			
		•No input signal •EE	•TP13 (VCO OUT) •TP10 (SIGNAL GND) •TP11 (VCO FREQ) 0 2 Y/C	•R423 (321 FH VCO) 0 2 Y/C	1) In the condition that TP10 and TP11 are shortcircuited, confirm that the frequency at TP13 is 626.95 ± 3 kHz. 2) If not, replace R423 with a V. resistor NVP1301-623N and adjust it to obtain 0.4 Vp-p.
4	Pilot burst level/phase	• Color bar input • EE	• TP8 (PILOT BURST LEVEL) 0 2 Y/C  **Fig. 2-4-19** Pilot burst level Adjust burst phase difference to be 270°  R MG YL CY G B 75% 100% 20% 10% dG U **Fig. 2-4-20** Burst phase dir.	• R421 (PILOT BURST LEVEL) • C107 (PILOT BURST PHASE) 0 2 Y/C	1) Adjust R421 so that pilot burst level becomes 1.1 ± 0.05 times larger than burst level. 2) Connect an oscilloscope to TP8. 3) Connect the oscilloscope output to the input of a vectorscope. 4) Synchronize the vectorscope with the VIDEO OUT signal. 5) Adjust C107 so that burst phase difference becomes 270°.

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
5	REC color level	• Color bar input • REC & PB • SP	• TP14 (PB COLOR IN LEVEL) $\boxed{0}\boxed{2}$ Y/C  Fig. 2-4-21 S REC color level	• R420 (S. REC COLOR LEVEL) $\boxed{0}\boxed{2}$ Y/C	1) Record the color bars signal and play it back. Observe waveform at TP14 with external trigger pulse of CN5 pin 1 (SW A) of the MAIN board. 2) Adjust R420 to obtain 0.17 Vp-p as the level of four signals respectively, and confirm it for the four in playback.
6	PB burst level	•Color bar input •REC & PB •SP •VIDEO OUT SW: CVBS	•TP19 (VIDEO OUT) $\boxed{0}\boxed{2}$ Y/C  Fig. 2-4-22 PB burst level	•R422 (BURST LEVEL) $\boxed{0}\boxed{2}$ Y/C	1) Record the color bars signal and play it back. Adjust R422 to obtain 0.6 V as the burst level.

2.4.5 Conventional color circuit

Note: *Before proceeding to do the following adjustment, make sure of the normal value or setting of the item in Conventional mode.*

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
1	PB ACC input level	• This circuit uses fixed resistors, If IC17 is replaced, these may require replacement with variable resistors to allow adjustment. • Alignment tape Color bar (MHVE-2C or MH-C2)	•TP24 (PB ACC IN) •TP10 (SIGNAL GND) •TP30 (PB 5 V) •TP23 (0.5 H DET) $\boxed{0}\boxed{2}$ Y/C  	•R427 (N PB ACC INPUT LEVEL) $\boxed{0}\boxed{2}$ Y/C	1) With input signal of 1/2 Vcc to TP23, confirm that the frequency at TP24 is 30.0 ± 0.2 kHz. 2) If not, replace R427 with a V. resistor NVP1301-273N and adjust it to obtain 30.0 ± 0.2 kHz.

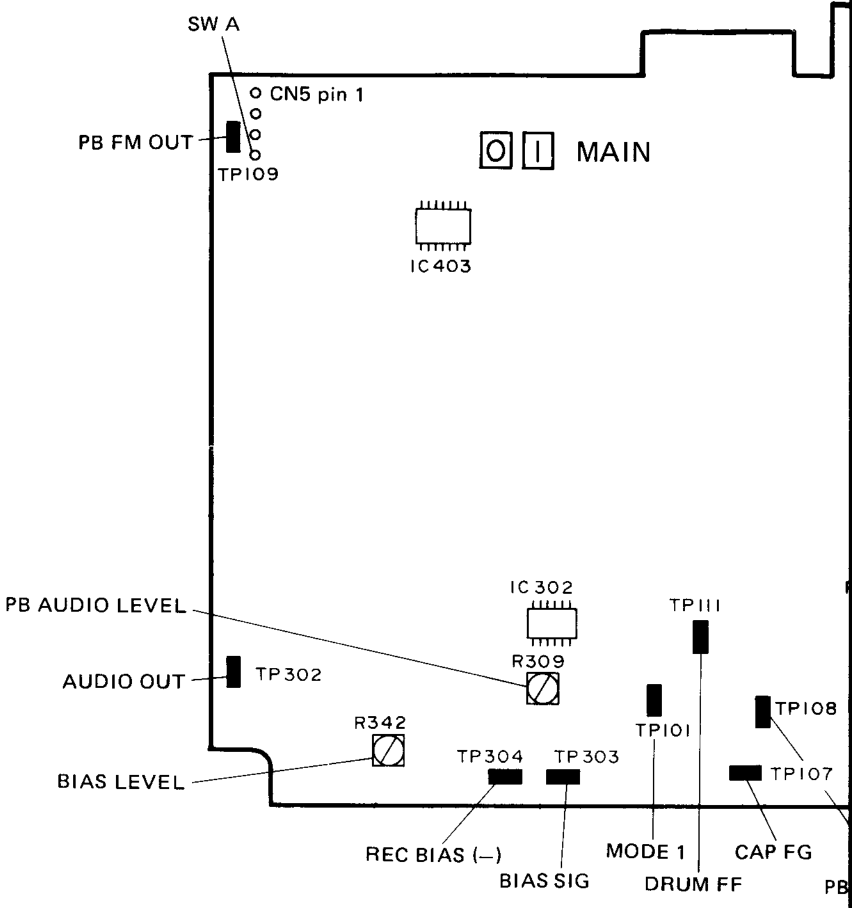
No.	Item	Mode & Signal	Test Point Waveform & Adjustment	Adjustment Parts	Procedure
2	0.5 H delay level	•Alignment tape Color bar (MHVE-2C or MH-C2)	•TP15 (0.5H DELAY LEVEL) •TP29 (0.5H REF LEVEL) 0 2 Y/C  **Fig. 2-4-23** S PB Y level	•R425 (0.5 H DELAY LEVEL) 0 2 Y/C	1) Adjust R425 to align TP29 level and TP15 level.

2.5 AUDIO CIRCUIT

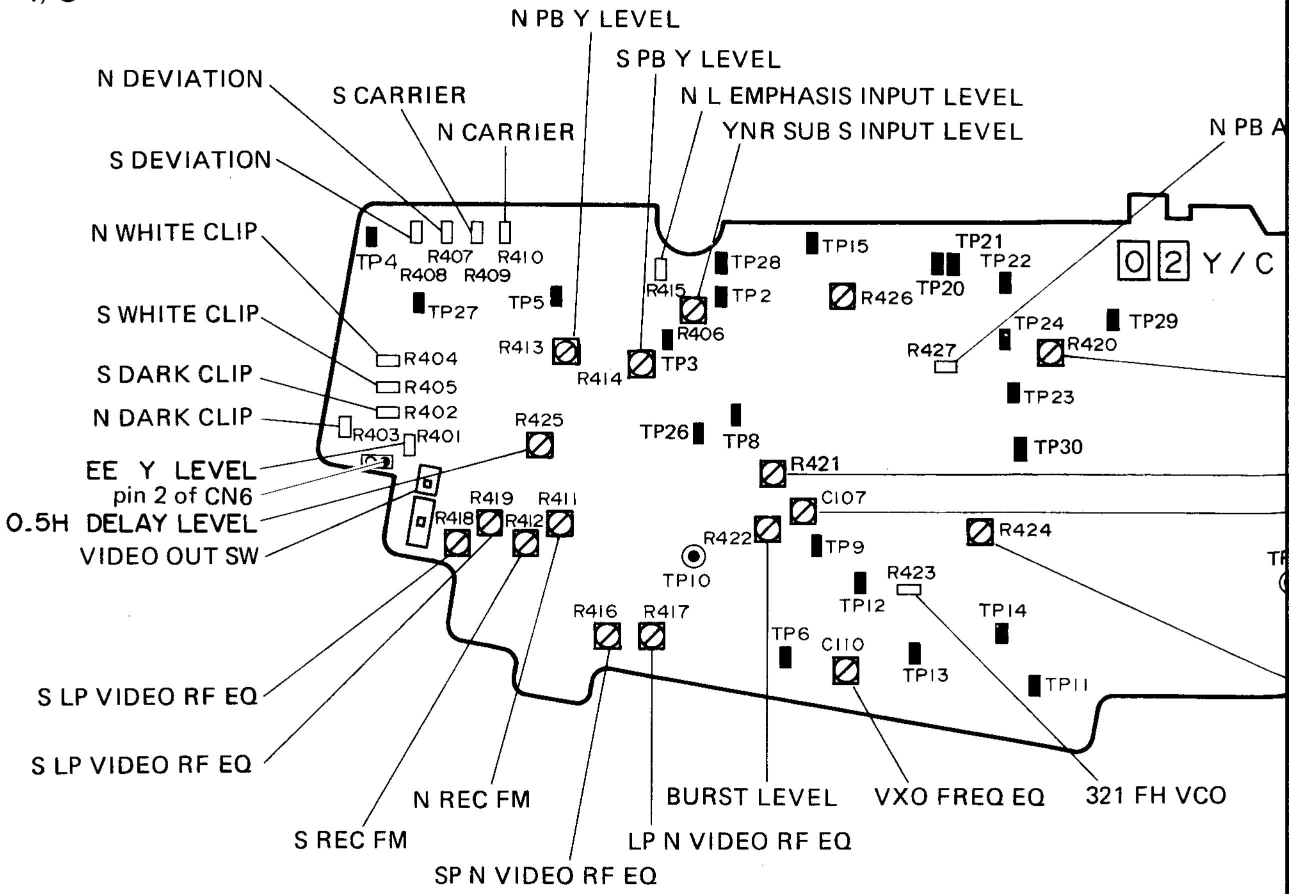
No.	Item	Mode & Signal	Test Point Waveform & Adjustment	Adjustment Parts	Procedure
1	Bias level	• No input signal • REC	• TP303 (REC BIAS +) • TP304 (REC BIAS –) 0 1 MAIN-3	• R342 (BIAS LEVEL) 0 1 MAIN-3	1) Connect an audio tester between TP303 and TP304, and adjust R342 so that the level is –51 dBs (6.2 mVp-p, 2.2 mV rms) in the Normal mode. 2) Confirm that the level is –48.5 dBs (8.5 mVp-p, 3.0 mVrms) in the S-VHS mode.
2	PB audio level	• Alignment tape Color bar (1 kHz) (MHVE-2C or MH-C2)	• AUDIO OUT	• R309 (PB AUDIO LEVEL) 0 1 MAIN-3	1) Connect the audio tester to the AUDIO OUT terminal, and adjust R309 to obtain –6 dBs (1.1 Vp-p, 0.39 Vrms) as PB audio signal level. 2) Confirm that the level is –6 dBs (1.1 Vp-p, 0.39 Vrms) in the S-VHS mode.

• LOCATION OF TEST POINTS AND VRs ON THE MAIN-3 AND Y/C BOARDS

– MAIN 3 –


SW A
CN5 pin 1
PB FM OUT
TP109
0 1 MAIN
IC403
IC302
TP111
PB AUDIO LEVEL
R309
AUDIO OUT
TP302
TP101
TP108
R342
BIAS LEVEL
TP304
TP303
TP107
REC BIAS (–)
BIAS SIG
MODE 1
DRUM FF
CAP FG
PB

– Y/C –


N PB Y LEVEL
S PB Y LEVEL
N DEVIATION
S CARRIER
N CARRIER
N L EMPHASIS INPUT LEVEL
YNR SUB S INPUT LEVEL
N PB A
S DEVIATION
N WHITE CLIP
S WHITE CLIP
S DARK CLIP
N DARK CLIP
EE Y LEVEL
pin 2 of CN6
0.5H DELAY LEVEL
VIDEO OUT SW
0 2 Y/C
TP4
R407
R408
R409
R410
TP27
TP5
R413
R414
R415
R406
TP3
TP28
TP2
TP15
R426
TP20
TP21
TP22
TP24
R427
R420
TP29
TP23
R404
R405
R402
R403
R401
R425
TP26
TP8
TP30
R421
C107
R419
R411
R418
R412
R422
TP9
R424
TP10
R423
TP12
TP14
R416
R417
TP6
C110
TP13
TP11
S LP VIDEO RF EQ
S LP VIDEO RF EQ
N REC FM
S REC FM
SP N VIDEO RF EQ
LP N VIDEO RF EQ
BURST LEVEL
VXO FREQ EQ
321 FH VCO

TP29 level and

between TP303
R342 so that the
p-p, 2.2 mV rms)

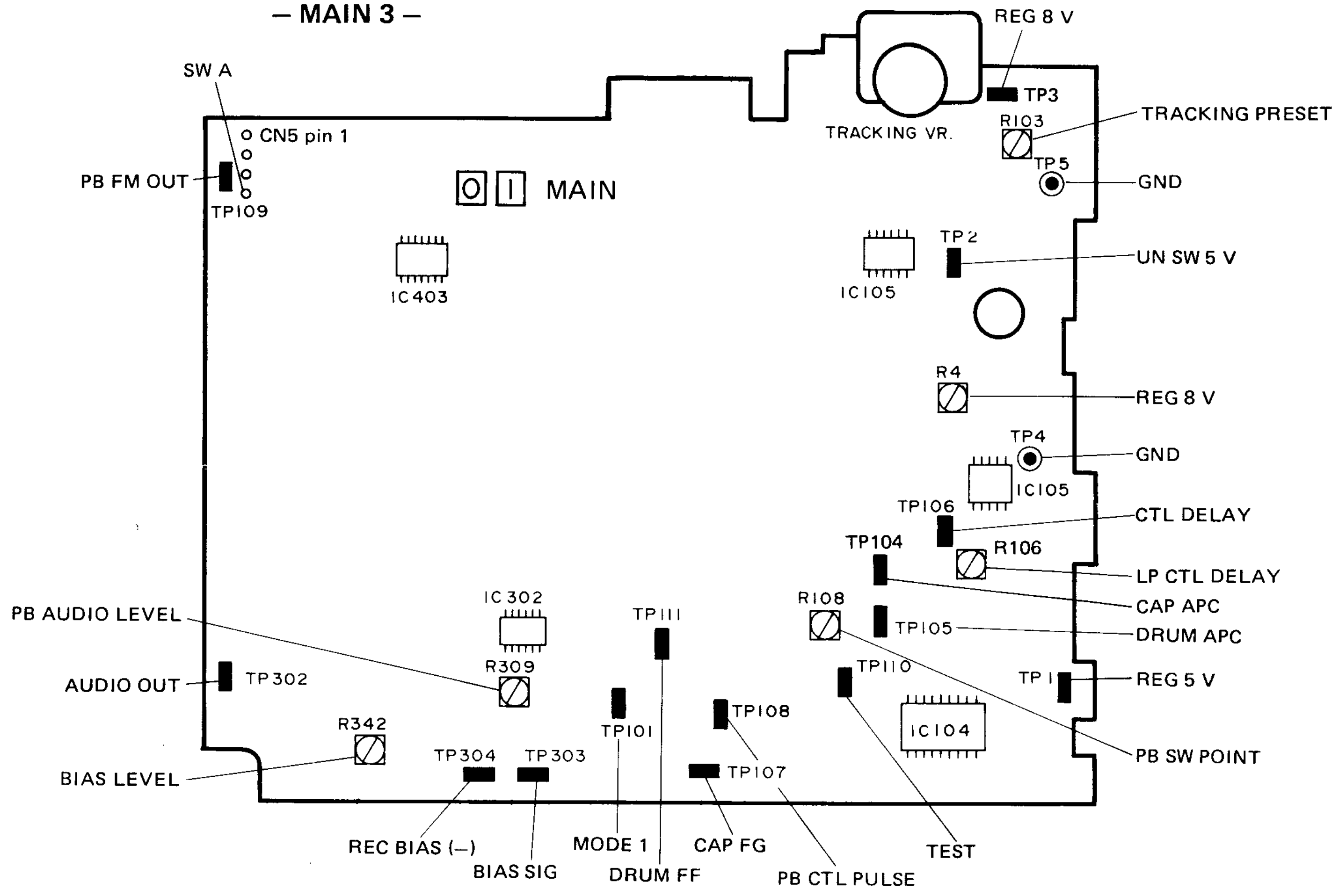
l is −48.5 dBs
s) in the S-VHS

r to the AUDIO
t R309 to obtain
39 Vrms) as PB

is −6 dBs (1.1
S-VHS mode.

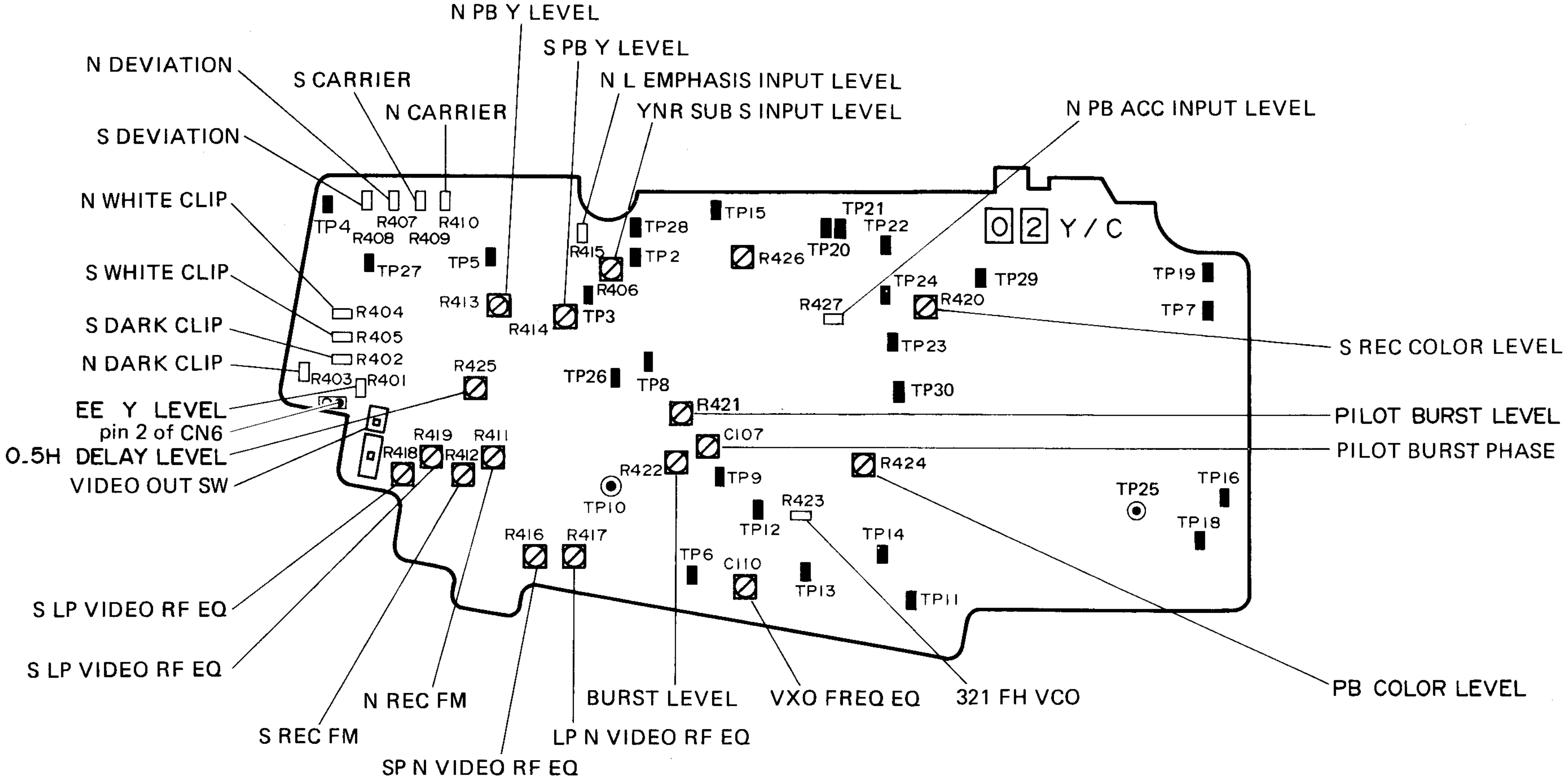
• LOCATION OF TEST POINTS AND VRs ON THE MAIN-3 AND Y/C BOARDS

— MAIN 3 —



REG 8 V
TP3
TRACKING VR.
R103
TRACKING PRESET
TP5
GND
SW A
CN5 pin 1
PB FM OUT
TP109
01 MAIN
IC403
IC105
TP2
UN SW 5 V
R4
REG 8 V
TP4
GND
IC105
TP106
CTL DELAY
TP104
R106
LP CTL DELAY
CAP APC
DRUM APC
TP105
R108
TP110
TP1
REG 5 V
PB SW POINT
IC104
IC302
R309
PB AUDIO LEVEL
AUDIO OUT
TP302
R342
BIAS LEVEL
TP304
TP303
TP111
TP101
TP108
TP107
REC BIAS (−)
BIAS SIG
MODE 1
DRUM FF
CAP FG
PB CTL PULSE
TEST

— Y/C —

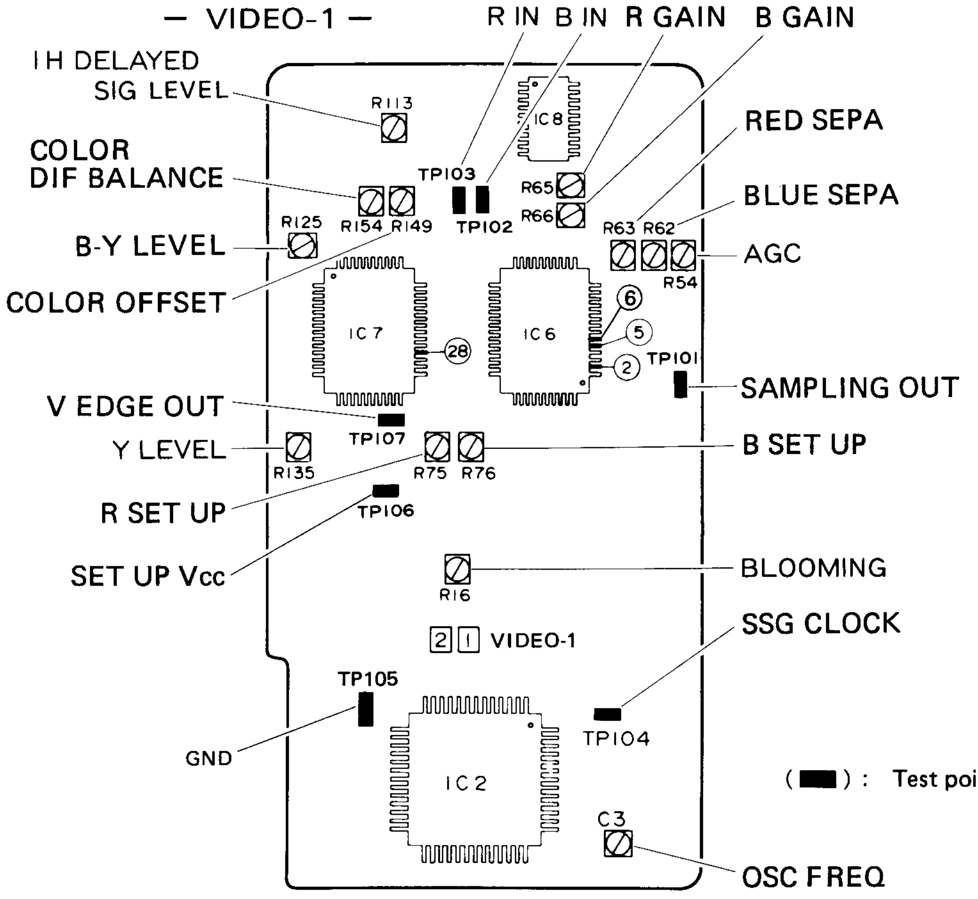


N PB Y LEVEL
S PB Y LEVEL
N L EMPHASIS INPUT LEVEL
YNR SUB S INPUT LEVEL
N PB ACC INPUT LEVEL
N DEVIATION
S CARRIER
N CARRIER
S DEVIATION
N WHITE CLIP
S WHITE CLIP
S DARK CLIP
N DARK CLIP
EE Y LEVEL
pin 2 of CN6
0.5H DELAY LEVEL
VIDEO OUT SW
TP4
R407
R410
R408
R409
TP27
TP5
R413
R414
R415
R406
TP3
TP28
TP2
TP15
TP21
TP22
TP20
R426
02 Y/C
TP24
TP29
R427
R420
TP19
TP7
TP23
TP30
R404
R405
R402
R403
R401
R425
TP26
TP8
R421
C107
R419
R411
R418
R412
R422
TP10
TP9
R424
R423
TP12
TP14
TP25
TP16
TP18
R416
R417
TP6
C110
TP13
TP11
S REC COLOR LEVEL
PILOT BURST LEVEL
PILOT BURST PHASE
PB COLOR LEVEL
S LP VIDEO RF EQ
S LP VIDEO RF EQ
N REC FM
S REC FM
SP N VIDEO RF EQ
LP N VIDEO RF EQ
BURST LEVEL
VXO FREQ EQ
321 FH VCO

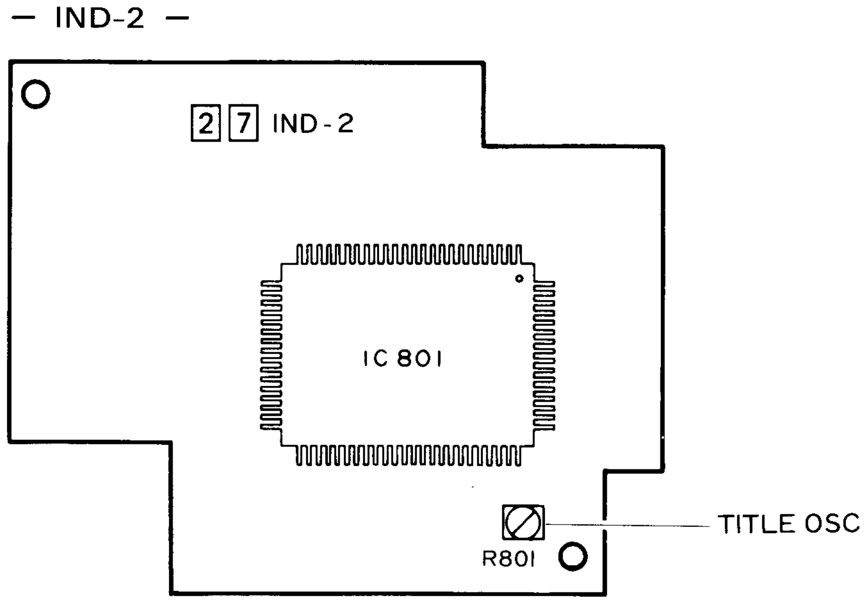
▭ : Trimming resistor is used for ordinary VR.
▬ ◉ : Test point for easy hookup with oscilloscope probe
▨ : Adjusting VR

● LOCATION OF TEST POINTS AND VRs ON THE CAMERA SECTION'S BOARDS

— VIDEO-1 —

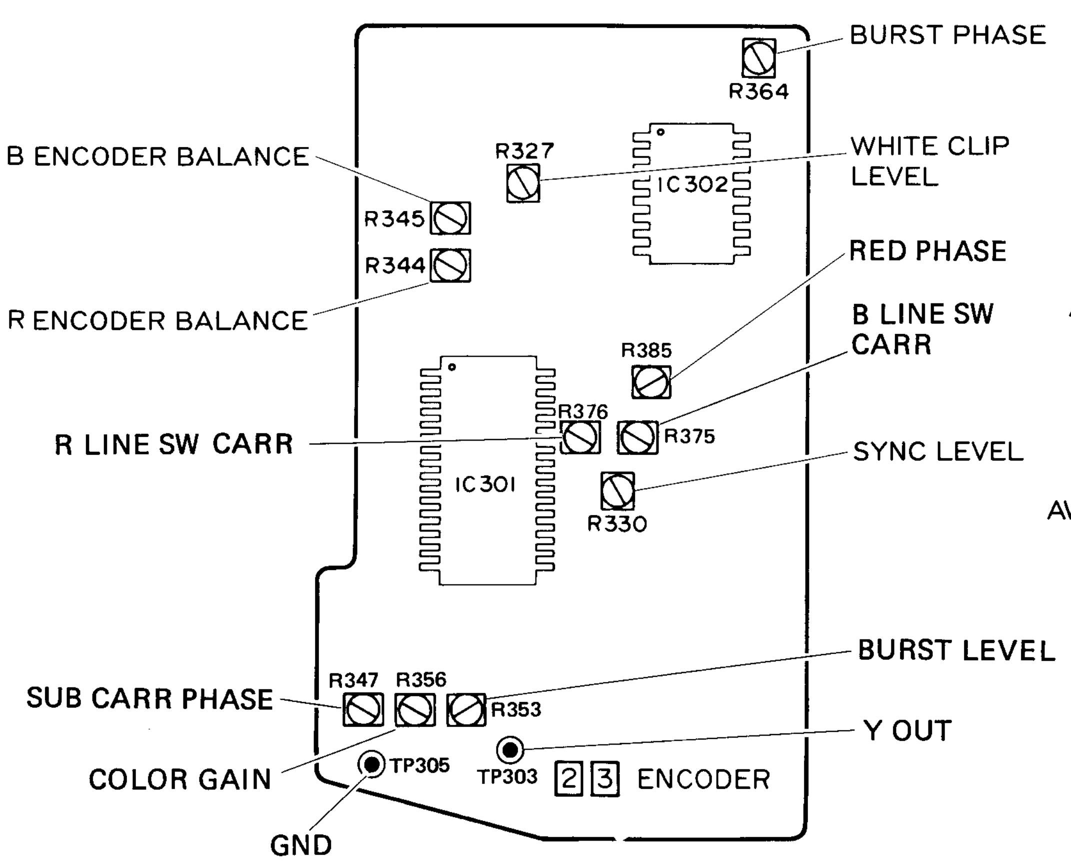

R IN
B IN
R GAIN
B GAIN
I H DELAYED SIG LEVEL
COLOR DIF BALANCE
B-Y LEVEL
COLOR OFFSET
V EDGE OUT
Y LEVEL
R SET UP
SET UP Vcc
RED SEPA
BLUE SEPA
AGC
SAMPLING OUT
B SET UP
BLOOMING
SSG CLOCK
GND
OSC FREQ
R113
IC8
TP103
TP102
R65
R66
R125
R154
R149
R63
R62
R54
IC7
IC6
㉘
⑥
⑤
②
TP101
TP107
R135
R75
R76
TP106
R16
2 1 VIDEO-1
TP105
TP104
IC2
C3

— IND-2 —

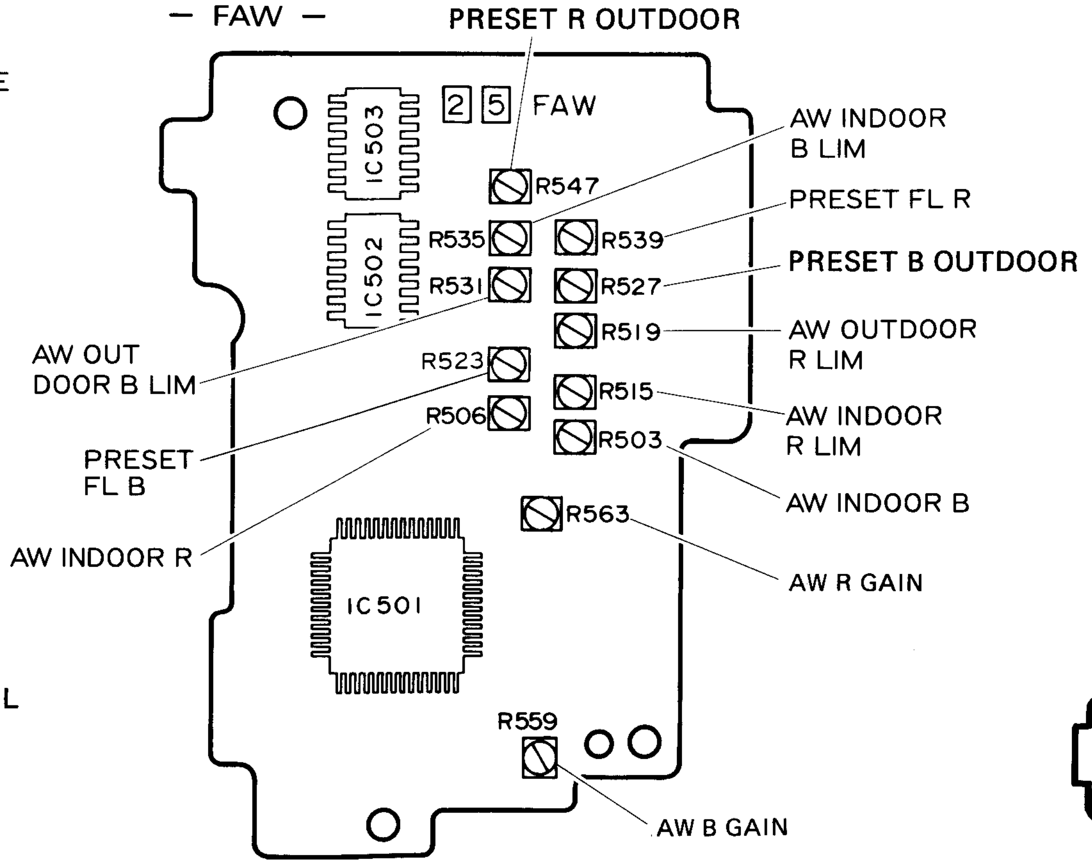

2 7 IND-2
IC 801
R801
TITLE OSC

(▬) : Test point for easy hookup with oscilloscope probe

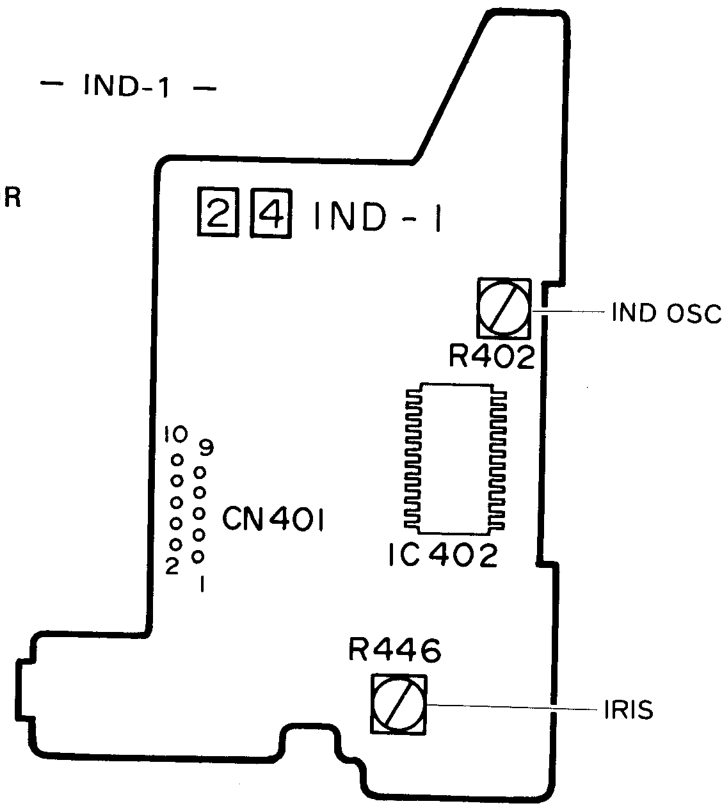
— ENCODER —


BURST PHASE
R364
B ENCODER BALANCE
R327
IC302
WHITE CLIP LEVEL
R345
R344
R ENCODER BALANCE
RED PHASE
R385
B LINE SW CARR
R376
R375
R LINE SW CARR
SYNC LEVEL
IC301
R330
BURST LEVEL
R347
R356
R353
SUB CARR PHASE
COLOR GAIN
Y OUT
TP305
TP303
2 3 ENCODER
GND

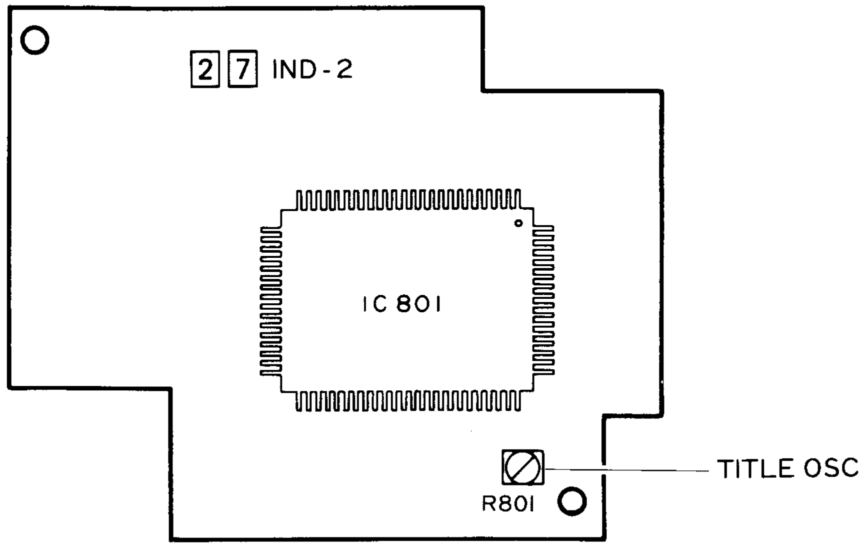
— FAW —


PRESET R OUTDOOR
IC503
2 5 FAW
AW INDOOR B LIM
R547
R535
R539
PRESET FL R
IC502
R531
R527
PRESET B OUTDOOR
R519
AW OUTDOOR R LIM
AW OUT DOOR B LIM
R523
R515
AW INDOOR R LIM
PRESET FL B
R506
R503
AW INDOOR B
R563
AW R GAIN
AW INDOOR R
IC501
R559
AW B GAIN

— IND-1 —


2 4 IND - 1
R402
IND OSC
10
9
2
1
CN401
IC 402
R446
IRIS

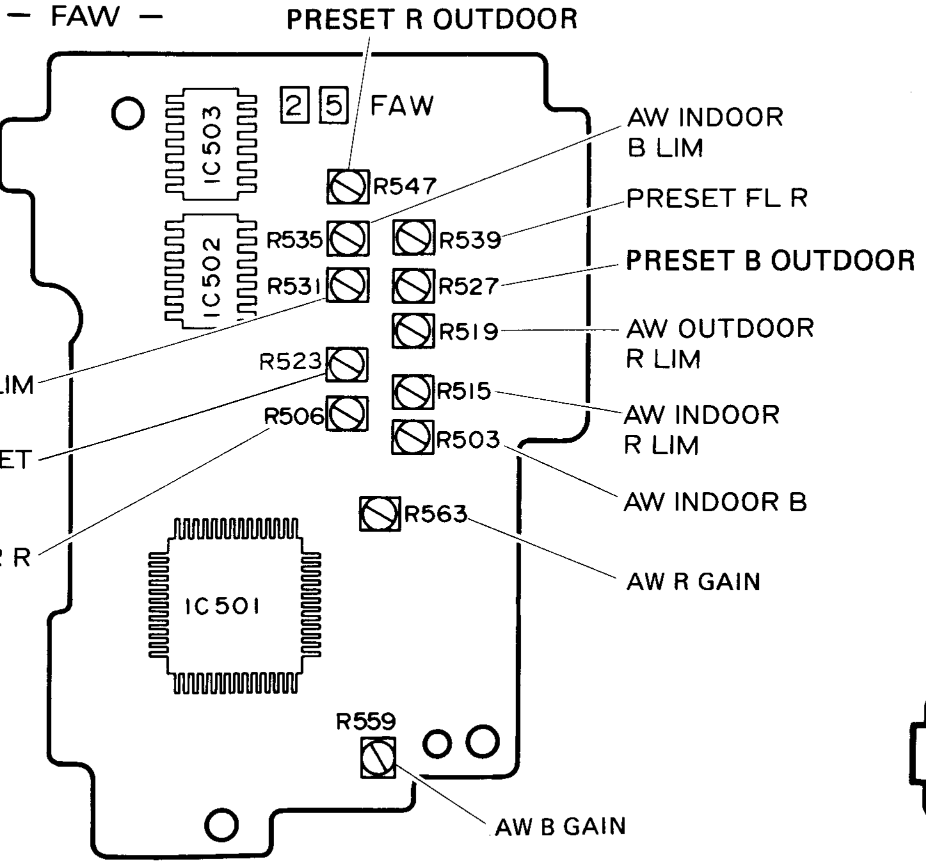
— IND-2 —



27 IND-2
IC 801
R801
TITLE OSC

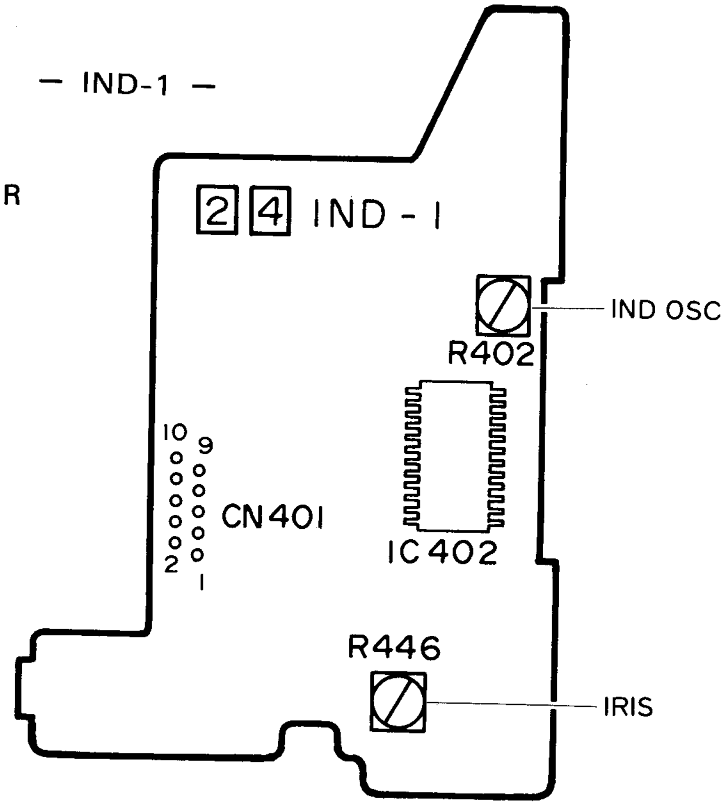
okup with oscilloscope probe

— FAW —



PRESET R OUTDOOR
25 FAW
IC503
IC502
IC501
R547
R535
R539
R531
R527
R519
R523
R515
R506
R503
R563
R559
AW INDOOR
B LIM
PRESET FL R
PRESET B OUTDOOR
AW OUTDOOR
R LIM
AW INDOOR
R LIM
AW INDOOR B
AW R GAIN
AW B GAIN
LIM
ET
R

— IND-1 —



24 IND-1
R402
IND OSC
10
9
2
1
CN401
IC402
R446
IRIS

SECTION 3
CAMERA SECTION ADJUSTMENT

3.1 PREPARATION

3.1.1 Precautions

1. Make sure to use 2 or more lighting fixtures (3200 K in color temperature) and to light up the test pattern with them at 1200 lux or more brightly.
2. Use clean test pattern and camera filters.
3. All adjustments must be performed in a room that shuts out other light than the specific illumination.
4. Unless otherwise specified, proceed to adjust the camera section as the controls set to the following positions.

   FOCUS : MANUAL
   WHITE BALANCE : PRESET INDOOR
   SHUTTER SPEED : STANDARD (STD)

3.1.2 Connections for adjustment

- For disassembly of the camera section, refer to section 1 " Service Caution and Disassembly", and connect it and test instruments as shoun in Fig. 3-1-1.

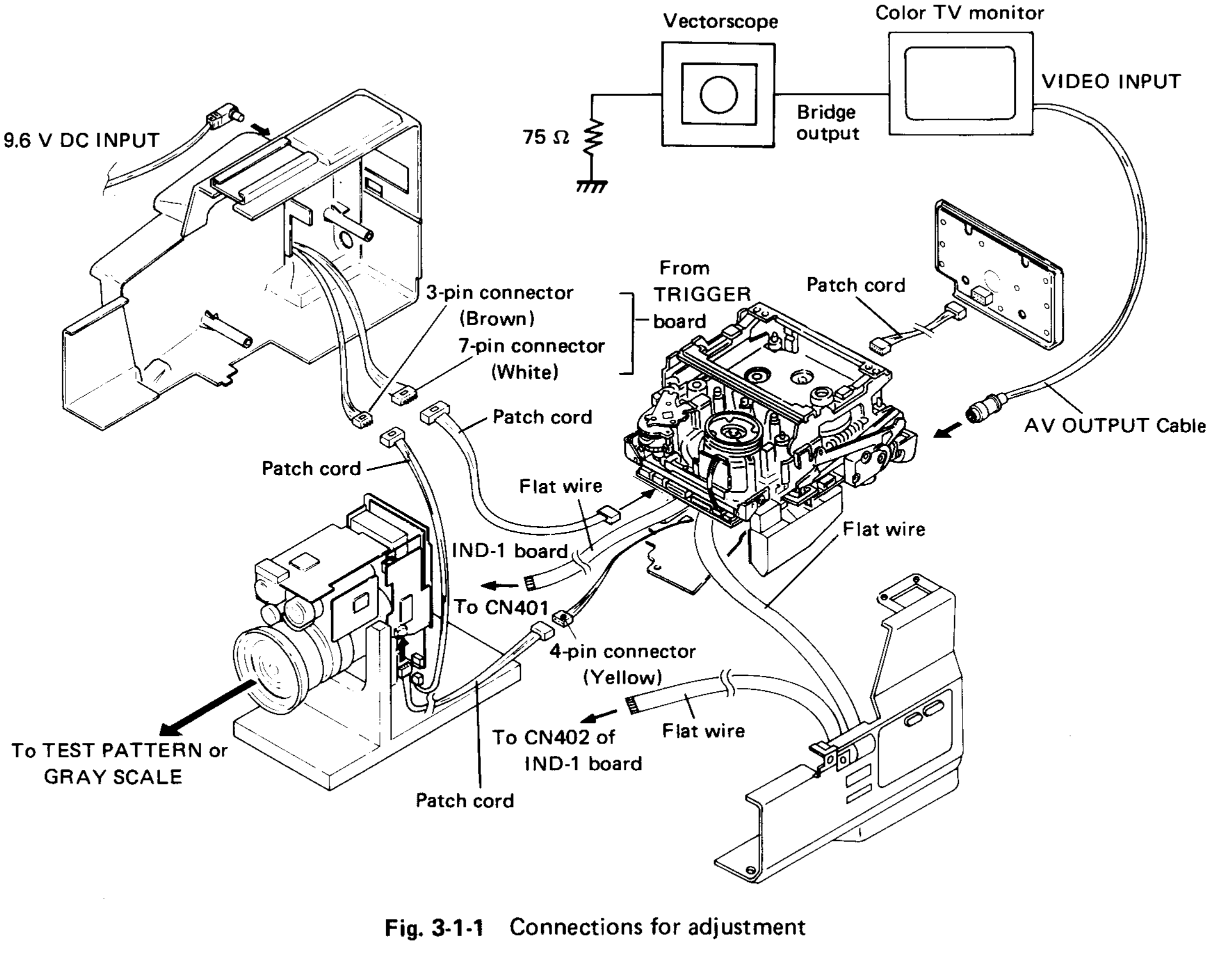
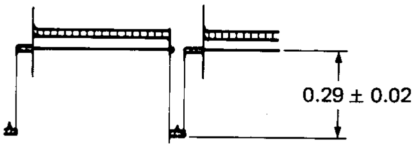
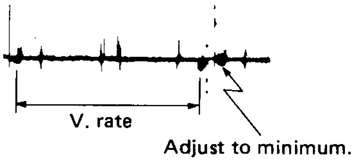
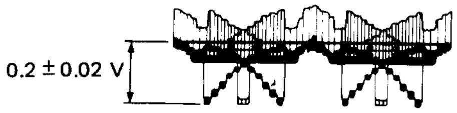
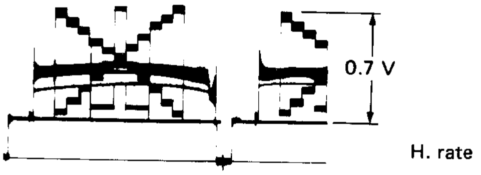

Vectorscope
Color TV monitor
VIDEO INPUT
Bridge output
75 Ω
9.6 V DC INPUT
From TRIGGER board
3-pin connector (Brown)
7-pin connector (White)
Patch cord
Patch cord
Patch cord
Flat wire
AV OUTPUT Cable
IND-1 board
To CN401
Flat wire
4-pin connector (Yellow)
Flat wire
To CN402 of IND-1 board
To TEST PATTERN or GRAY SCALE
Patch cord

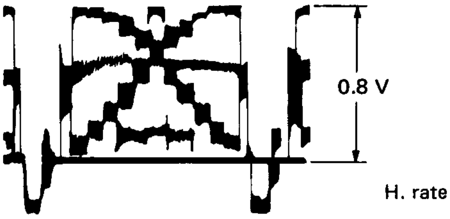
Fig. 3-1-1 Connections for adjustment

3.2 Y (LUMINANCE) SIGNAL SYSTEM

Note: *For adjustment, set the controls to the following positions.*

FOCUS : MANUAL
WHITE BALANCE : PRESET INDOOR
SHUTTER SPEED : STANDARD (STD)

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
1	CCD drive frequency	–	• TP104 (SSG CLOCK) $\boxed{2}\boxed{1}$ VIDEO-1	• C3 (OSC FREQ) $\boxed{2}\boxed{1}$ VIDEO-1	1) Connect a frequency counter to TP104, and adjust C3 to obtain 12.87500 (824 x Fh) MHz ± 40 Hz.
2	Sync level	• Lens closed	• TP303 (Y OUT) $\boxed{2}\boxed{3}$ ENCODER  **Fig. 3-2-1** Sync level	• R330 (SYNC LEVEL) $\boxed{2}\boxed{3}$ ENCODER	1) Cap the lens. 2) Adjust R330 so that sync level at TP303 becomes 0.29 V.
3	Vertical enhancer balance	• Gray scale	• TP107 (V EDGE OUT) $\boxed{2}\boxed{1}$ VIDEO-1  **Fig. 3-2-2** V. edge noise	• R113 (1H DELAYED SIG LEVEL) $\boxed{2}\boxed{1}$ VIDEO-1	1) Pick up the gray scale and observe waveform at TP107. 2) Adjust R113 to minimize average level of the waveform.
4	Iris	• Gray scale	• TP101 (SAMPLING OUT) $\boxed{2}\boxed{1}$ VIDEO-1  **Fig. 3-2-3** Sampling out	• R446 (IRIS) $\boxed{2}\boxed{4}$ IND-1	1) Pick up the gray scale and observe waveform at TP101 with 10 kΩ resistance. 2) Adjust R446 to obtain 0.2 V of signal level.
	and Y level		• TP303 (Y OUT) $\boxed{2}\boxed{3}$ ENCODER  **Fig. 3-2-4** Y level	• R135 (Y LEVEL) $\boxed{2}\boxed{1}$ VIDEO-1	3) Connect the oscilloscope to TP303 and adjust R135 to obtain 0.7 V of signal level.

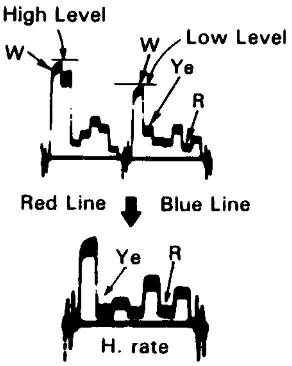
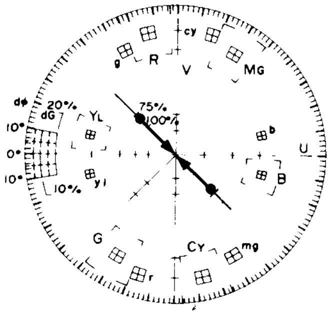
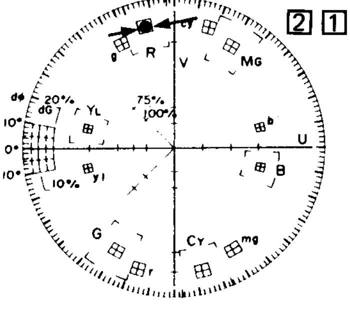
No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
5	White clip level	• Gray scale	• TP303 (Y OUT) 2 3 ENCODER  Fig. 3-2-5 White clip	• R327 (WHITE CLIP LEVEL) 2 3 ENCODER	1) Connect the oscilloscope to TP303 and pick up the gray scale pattern. 2) Turn the zoom ring so that the white peak portion is clipped on the oscilloscope screen (see figure). 3) Adjust R327 to obtain 0.8 V of clipping level.
6	AGC	• Lens closed	• IC6 pin 2 (AGC) 2 1 VIDEO-1	• R54 (AGC) 2 1 VIDEO-1	1) Cap the lens. 2) Adjust R54 to obtain 1.1 ± 0.1 V DC at pin 2 of IC6.
7	Blooming	–	• TV monitor	• R16 (BLOOMING) 2 1 VIDEO-1	1) Pick up a fluourscent light and adjust R16 to minimize blooming. **Note:** *No matter how further R16 is turned, there will be no change in blooming observed on the monitor. Therefore, set R16 to a position where blooming becomes minimum for the first time and won't change any more even if R16 is turned further.*
8	Indicator (indication adj.)	• Lens capped • Manual focusing	• E. VF indication	• R402 (IND OSC) 2 4 IND-1	1) Turn the focus lens subtly until the "Correct focus" indication appears in the electronic viewfinder. 2) Adjust R402 to position the "Correct focus" indication in the center of the viewfinder screen.

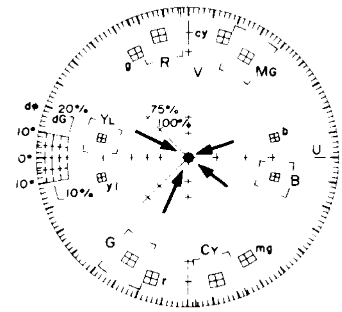
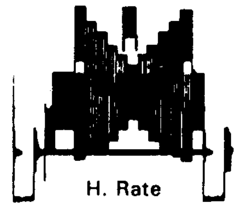
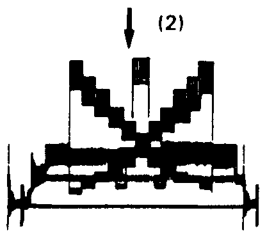
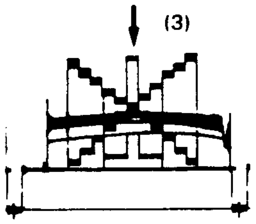
3.3 COLOR SIGNAL SYSTEM

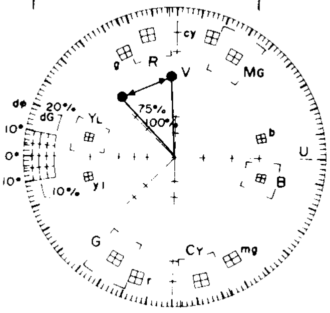
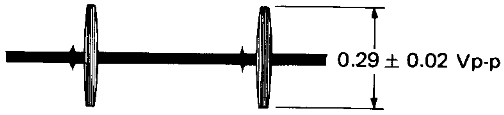
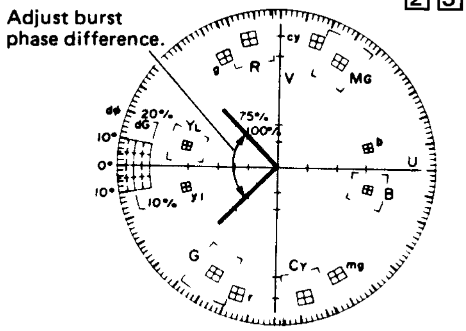
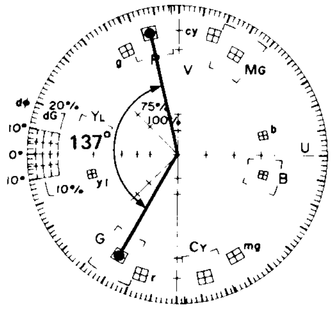
3.3.1 Basic indoor mode

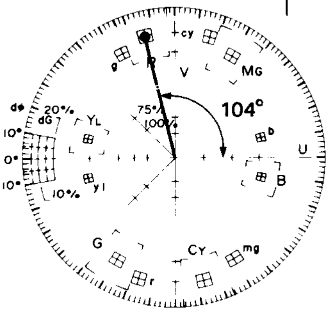
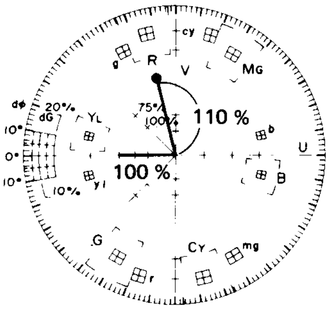
Note: *For adjustment, set the controls to the following positions.*

Focus : MANUAL
White Balance : PRESET INDOOR
Shutter Speed : STANDARD

No.	Item	Mode & Signal	Test Point Waveform & Adjustment	Adjustment Parts	Procedure
1	R/B separation	• Color bar	• TP103 (R IN) • TP102(B IN) [2] [1] VIDEO-1 • TP303 (Y OUT) (Ext. trigger) [2] [3] ENCODER  High Level W W Low Level Ye R Red Line Blue Line Ye R H. rate Fig. 3-3-1 R/B separation	• R63 (RED SEPA) • R62 (BLUE SEPA) [2] [1] VIDEO-1	1) Pick up the color bar with just scan and connect an oscilloscope to TP103. 2) When TP303 is swept with external trigger and the oscilloscope is set to HOLD OFF mode, observe only the blue line. 3) Adjust R63 to equalize levels of yellow and red. **Note:** ***Blue line means a line in which white level is lower than another line.*** 4) Connect the oscilloscope to TP102. 5) Adjust R62 for the same purpose of the above steps 2) and 3).
2	Color offset	• Lens closed • Jump wire	• Vectorscope  cy R V MG 20% dG YL 75% 100% 10° 0° 10° 10% yl b U B G CY mg r Fig. 3-3-2 Color offset	• R149 (COLOR OFFSET) [2] [1] VIDEO-1	1) Close the lens with the cap. 2) Add a jump wire between TP106 and TP105 to kill set up. 3) Adjust R149 so that dots meet with each other at the same point on the vectorscope.
3	Color difference balance	• Color bar	• Vectorscope  R V MG 20% dG YL 75% 100% 10° 0° 10° 10% yl b U B G CY mg r Fig. 3-3-3 Color difference balance	• R154 (COLOR DIF BALANCE) [2] [1] VIDEO-1	1) Pick up the color bar. 2) Adjust R154 to minimize fluctuation of red dot.

No.	Item	Mode & Signal	Test Point Waveform & Adjustment	Adjustment Parts	Procedure
4	Encoder balance	• Lens closed • Jump wire	• Vectorscope	• R344 (R ENCODER BAL) • R345 (B ENCODER BAL) • R375 (B LINE SW CARR) • R376 (R LINE SW CARR) 2 3 ENCODER	1) Close the lens with the cap. 2) Add a jump wire between TP106 and TP105 to kill set up. 3) Adjust R344, R345, R375 and R376 to center every dot on the vectorscope alternately.
		 cy R V MG 20% YL 75% 100% 10% U B G CY mg **Fig. 3-3-4** Encoder balance			
5	White balance	• Gray scale	• TP19 (VIDEO OUT) 0 2 Y/C		1) Pick up the gray scale pattern with just scan and observe H-rate waveform at TP19 on the Y/C board.
		 **Fig. 3-3-5** White balance - 1		• R76 (B SETUP) • R75 (R SETUP) 2 2 VIDEO-1	2) Adjust R76 and R75 alternately so that carrier leakage of low level becomes minimum.
		 **Fig. 3-3-6** White balance - 2		• R66 (B GAIN) • R65 (R GAIN) 2 2 VIDEO-1	3) Adjust R66 and R65 alternately so that carrier leakage of white peak level becomes minimum. 4) Repeat steps 2) and 3) several times to minimize carrier leakage all over. **Note:** *Confirm that dot is positioned at the center of the vectorseope to minimize the carrier leckage.*
		 **Fig. 3-3-7** White balance - 3			

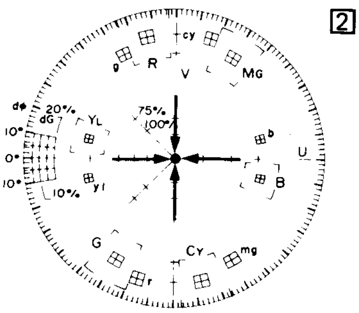
No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
6	Sub carrier phase	• Color bar	• Vectorscope  cy R V MG dφ 20% dG YL 75% 100% 10° 0° 10° 10% yl U B b G CY mg r Fig. 3-3-8 Sub carrier phase	• R347 (SUB CARR PHASE) $\boxed{2}$ $\boxed{3}$ ENCODER	1) Pick up the color bar. 2) Adjust R347 so that RED dots meet with each other at the same point on the vectorscope. 3) If necessary, check Item 3, color difference balance.
7	Burst level	• Lens closed	• CN304 pin 1 (C OUT) $\boxed{2}$ $\boxed{3}$ ENCODER  0.29 ± 0.02 Vp-p H. rate Fig. 3-3-9 Burst level	• R353 (BURST LEVEL) $\boxed{2}$ $\boxed{3}$ ENCODER	1) Close the lens with the cap. 2) Connect the oscilloscope to pin 1 of CN304 and adjust R353 to obtain 0.2 Vp-p as the burst level.
8	Burst phase	• Lens closed	• Vectorscope  Adjust burst phase difference. cy R V MG dφ 20% dG YL 75% 100% 10° 0° 10° 10% yl U B b G CY mg r Fig. 3-3-10 Burst phase	• R364 (BURST PHASE) $\boxed{2}$ $\boxed{3}$ ENCODER	1) Close the lens with the cap. 2) Adjust R364 so that burst phase difference becones 90°.
9	Color phase	• Color bar	• Vectorscope  cy V MG dφ 20% dG YL 75% 100% 137° 10° 0° 10° 10% yl U B b G CY mg r Fig. 3-3-11 Color phase	• R125 (B-Y LEVEL) $\boxed{2}$ $\boxed{1}$ VIDEO-1	1) Pick up the color bar. 2) Adjust R125 so that phase difference between R and G becomes nearly 137° on the vectorscope.

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
10	Red phase	• Color bar	• Vectorscope  cy MG V 104° 75% 100% 20% dG dφ 10° 0° 10° 10% YL yl U B G CY mg Fig. 3-3-12 Red phase	• R385 (RED PHASE) $\boxed{2}\boxed{3}$ ENCODER	1) Pick up the color bar. 2) Adjust R385 so that phase difference of R becomes nearly 104° on the vectorscope.
11	Color level	• Color bar	• Vectorscope  cy R V MG 110 % 100 % 75% 20% dG dφ 10° 0° 10° 10% YL yl U B G CY mg Fig. 3-3-13 Color level	• R356 (COLOR GAIN) $\boxed{2}\ \boxed{3}$ ENCODER	1) Pick up the color bar. 2) Adjust R356 so that color level of the red section of the color bars become 1.1 time larger than the burst level. 3) Repeat adjustments of items No. 9 through No. 11 several times to get the natural color on the TV Monitor.

3.3.2 Preset FL (fluorescent) white balance

Note: *For adjustment, set the controls to the following positions.*

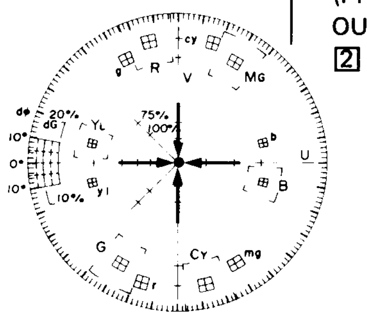
FOCUS : MANUAL
WHITE BALANCE : PRESET FL
SHUTTER SPEED : STANDARD (STD)

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
1	Preset FL	• Gray scale	• Vectorscope  Fig. 3-3-14 Preset FL	• R539 (PRESET FL R) • R523 (PRESET FL B) 2 5 FAW	1) Pick up the gray scale. 2) Attach C6 + CC30 Y filters to the camera lens. 3) Adjust R539 and R523 alternately so that every dots at the center of the vectorscope screen.

3.3.3 Preset outdoor white balance

Note: *For adjustment, set the controls to the following positions.*

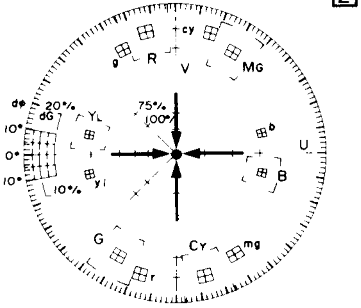
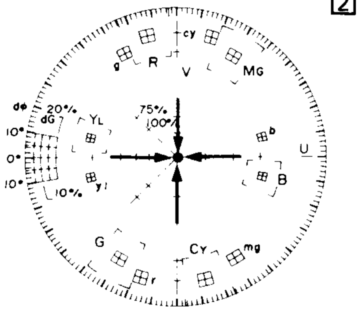
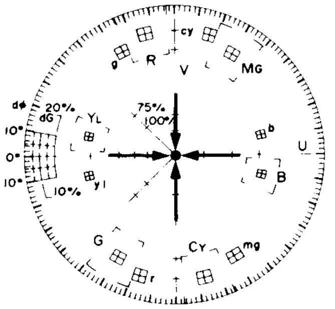
FOCUS : MANUAL
WHITE BALANCE : PRESET OUTDOOR
SHUTTER SPEED : STANDARD (STD)

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
1	Preset OUTDOOR	• Gray scale	• Vectorscope  Fig. 3-3-15 Preset OUTDOOR	• R527 (PRESET B OUTDOOR) • R547 (PRESET R OUTDOOR) 2 5 FAW	1) Pick up the gray scale. 2) Attach C12 filter to the camera lens. 3) Adjust R527 and R547 alternately so that every dots at the center of the vectorscope.

3.3.4 Automatic white balance

Note: *For adjustment, set the controls to the following positions.*

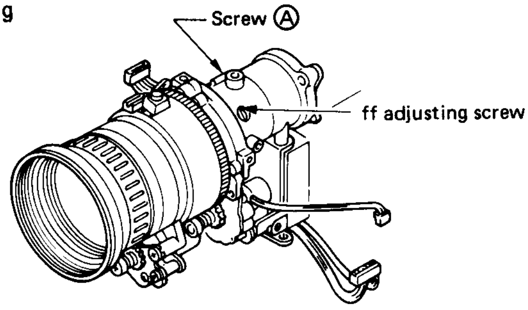
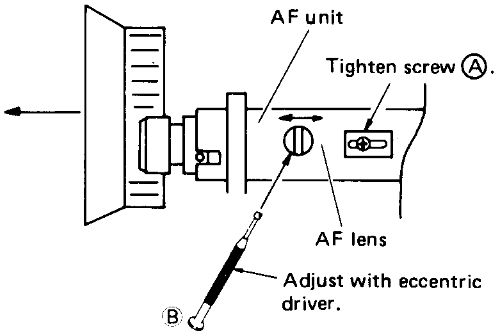
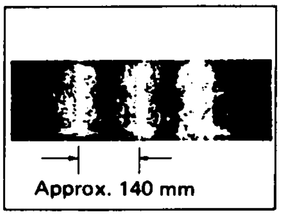
FOCUS : MANUAL
WHITE BALANCE : AUTO
SHUTTER SPEED : STANDARD (STD)

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
1	Auto white INDOOR	• Gray scale	• Vectorscope  cy R V MG 20% dG YL 75% 100% 10° 0° 10° 10% U B G CY mg Fig. 3-1-16 AW (Auto white) INDOOR	• R503 (AW INDOOR B) • R506 (AW INDOOR R) $\boxed{2}$ $\boxed{5}$ FAW	1) Pick up the gray scale. 2) Adjust R503 and R506 alternately so that every dots at the center of the vectorscope screen. 3) If necessary, check INDOOR Limiter.
2	Auto white OUTDOOR	• Gray scale	• Vectorscope  cy R V MG 20% dG YL 75% 100% 10° 0° 10° 10% U B G CY mg Fig. 3-3-17 AW (Auto white) OUTDOOR	• R559 (AW B GAIN) • R563 (AW R GAIN) $\boxed{2}$ $\boxed{5}$ FAW	1) Pick up the gray scale. 2) Attach C12 filter to the camera lens while C14 filter to the sensor. 3) Adjust R559 and R563 alternately so that every dots at the center of the vectorscope. 4) If necessary, check OUTDOOR Limiter.
3	IN-/OUT-DOOR Limiter	• Gray scale	• Vectorscope  cy R V MG 20% dG YL 75% 100% 10° 0° 10° 10% U B G CY mg Fig. 3-3-18 IN-/OUTDOOR limiter	• R515 (AW IN DOOR R LIM) • R535 (AW IN DOOR B LIM) • R519 (AW OUT DOOR R LIM) • R531 (AW OUT DOOR B LIM) $\boxed{2}$ $\boxed{5}$ FAW	1) Pick up the gray scale. 2) Attach W4 filter to the camera lens while W14 to the sensor. 3) Adjust R515 and R535 alternately so that every dots at the center of the vectorscope. 4) Attach C16 filter to the camera lens while C24 filter to the sensor. 5) Adjust R519 and R531 alternately so that every dots at the center of the vectorscope.

3.4 TITLE POSITION

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
1	Title indication width	• Lens closed	• TV monitor • TP303 (Y OUT) $\boxed{2}\boxed{3}$ ENCODER	• R801 (TITLE OSC) $\boxed{2}\boxed{7}$ IND-2	1) Close the camera lens with the cap, and press the TITLE MEMORY button. 2) Take off the lens cap and pick up an optional camera subject. 3) Observe TP303 waveform at H-rate, and adjust R801 so that video scanning period and title signal coincide with each other.

3.5 FOCUS INDICATOR POSITION

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
1	Back focus	• Subject in the distance of 2m or farther • Iris: Opened (with ND filter) • Manual focusing	• TV monitor  Fig. 3-5-1 Back focus position	• Master Lens	1) Attach a proper ND filter to the camera lens to open the iris fully in the daylight, and set the focus lens to " ∞ " position. 2) After the setscrew is loosened, slowly turn the ff adjusting screw to focus the lens observing the TV monitor. 3) Set the zoom lens to "68" focal distance and confirm that the subject is in focus. 4) Set the focus lens to "2 m" subject distance, and shoot a camera subject in the distance of 2 m. In this state, confirm that the image is in focus in two ways that the focal distance of the zoom lens is set to "68" and "8.5" positions. 5) Tighten the setscrew Ⓐ and lock the back focus adjusting screw.
2	AF (Auto Focus) adj.	• Subject in the distance of 2 m • Focus SW: AUTO • Auto focus chart • Iris: Opened	• TV monitor  AF unit Tighten screw Ⓐ. AF lens Adjust with eccentric driver. Ⓑ Fig. 3-5-2 AF adjusting point  Fig. 3-5-3 AF chart	• AF Lens	• Prior to auto focus adjustment, confirm that back focus of the camera has been correctly adjusted. 1) Set up the auto focus adjustment chart and the camera so that the distance between the chart and the front lens is 2 m approx. 2) Shoot the chart (shown in Fig. 3-5-3) as it is lifted up by the left side to have a tilt at 20° to the horizon. 3) After loosening the screw Ⓐ under the AF unit (see Fig. 3-5-2), insert an eccentric driver into the AF lens hole. 4) Focus the camera on the chart by moving the AF lens with the eccentric driver to the front and the rear. 5) Tighten the screw Ⓐ.

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
3	Focus bias	• Subject in the distance of 2 m • Focus SW: MANUAL • AF chart • Iris: Opened	• TV monitor • E. VF "Correct focus" indication	• VR4 (FOCUS BIAS) AF board	1) Focus the main lens. 2) Adjust VR4 so that "Correct focus" indication appears in the viewfinder.

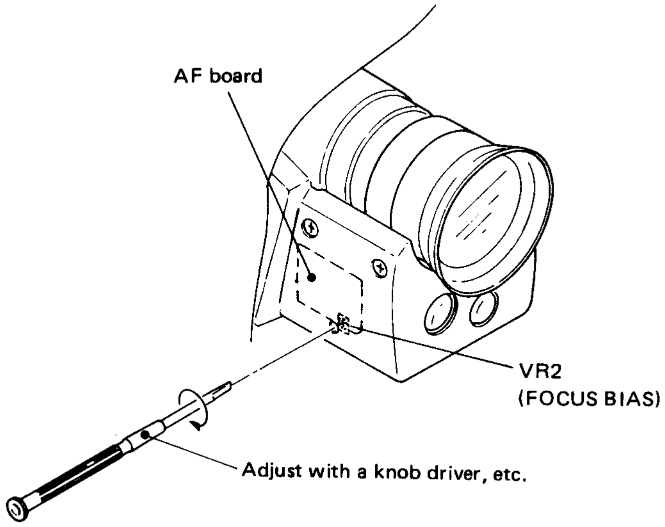

AF board
VR2
(FOCUS BIAS)
Adjust with a knob driver, etc.

Fig. 3-5-4 Focus bias position

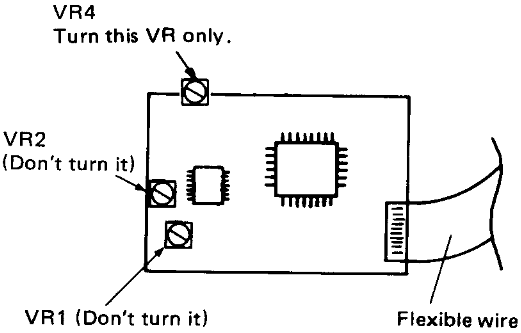

VR4
Turn this VR only.
VR2
(Don't turn it)
VR1 (Don't turn it)
Flexible wire

Fig. 3-5-5 Location of VRs

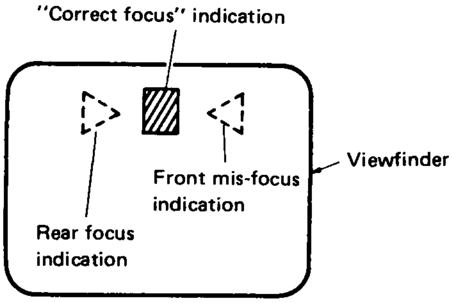
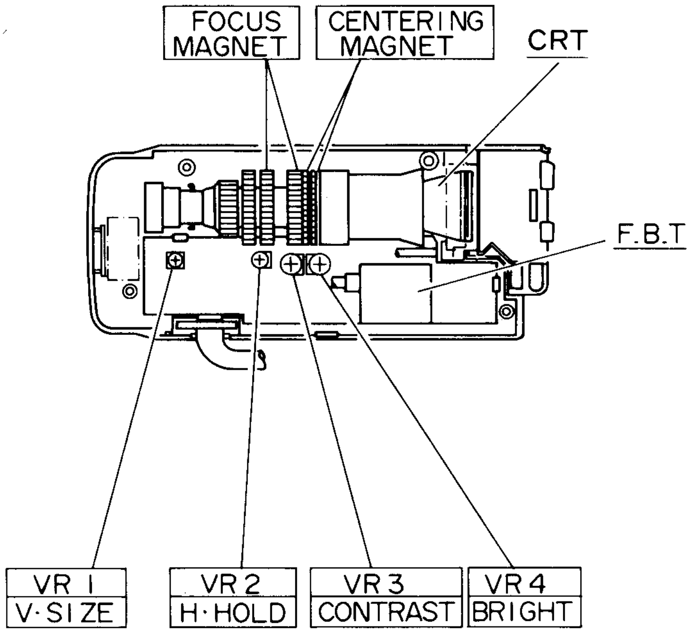

"Correct focus" indication
Viewfinder
Front mis-focus indication
Rear focus indication

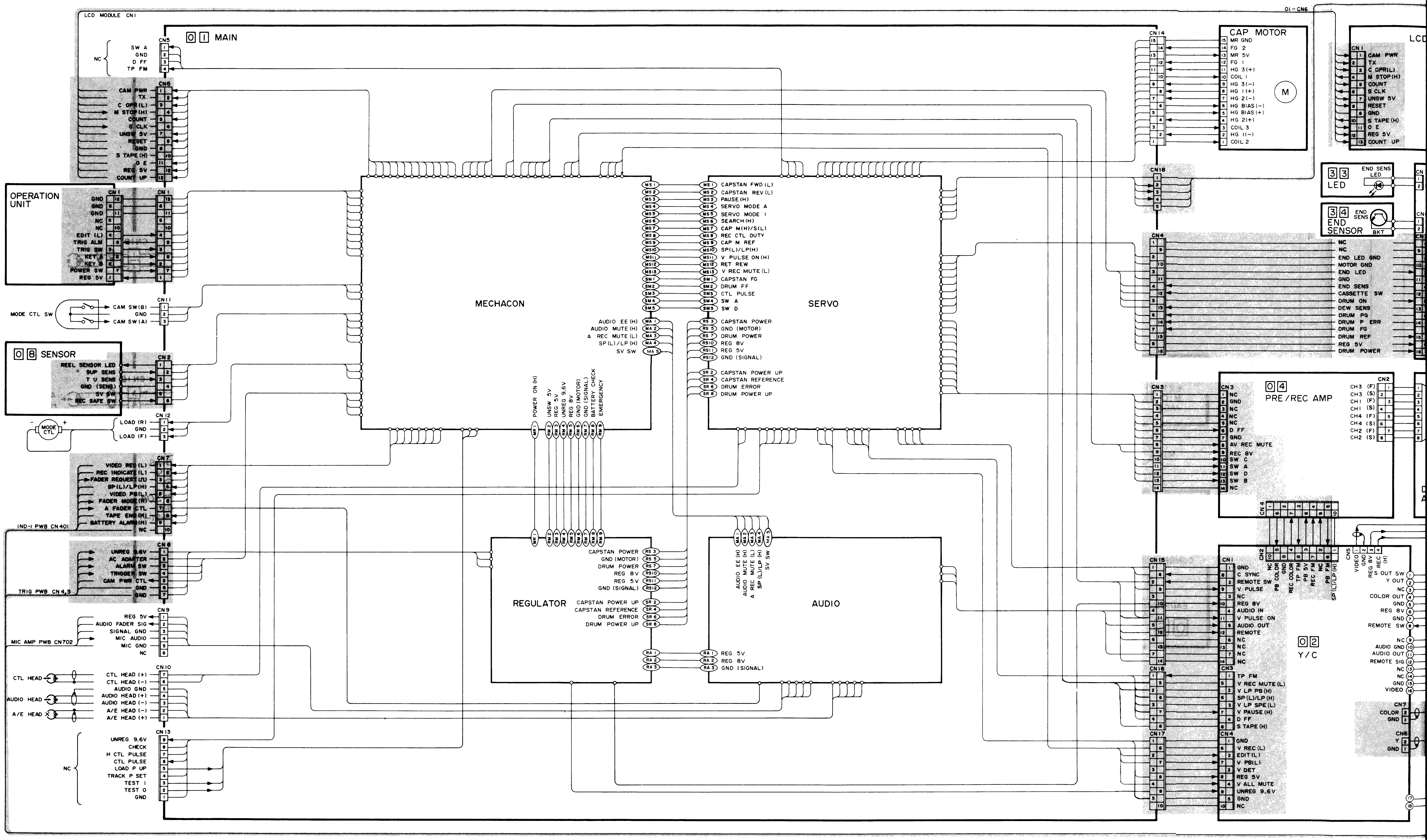
Fig. 3-5-6 Indicator position

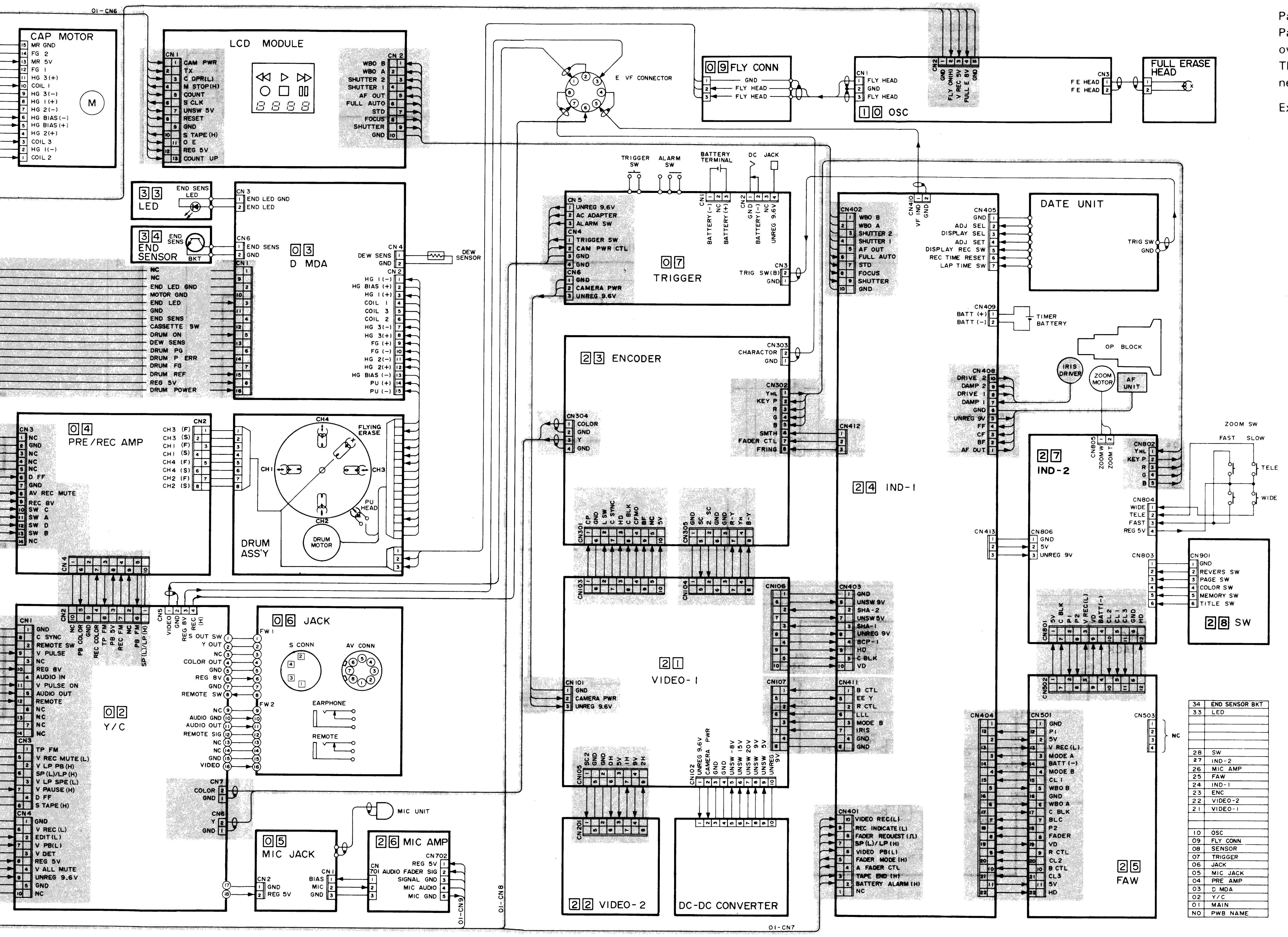
3.6 E. VF (ELECTRONIC VIEWFINDER) ADJUSTMENT

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
1	Horizontal sync.	• Alignment tape SP stairstep (MHPE-C or MH-C2)	• E. VF  FOCUS MAGNET CENTERING MAGNET CRT F.B.T VR 1 V·SIZE VR 2 H·HOLD VR 3 CONTRAST VR 4 BRIGHT	• VR2 (H. HOLD) [5] [0] E. VF	1) Observing the viewfinder screen, turn VR2 full clockwise to make the picture unstable. 2) Gradually return VR2 counterclockwise until the picture becomes stable. Mark the VR position where the picture is completely stabilized. 3) Next, turn VR2 full counterclockwise to make the picture unstable similarly to the above step 1). 4) Gradually return VR2 clockwise until the picture becomes stable, and mark the position of VR2. 5) Set VR2 to the midpoint between the two markings in the steps 2) and 4). **Note:** ***It is the correct VR setting by which DC voltage at pin 12 of IC1 is 3.0 V.***
2	Vertical scanning	• Alignment tape SP stairstep (MHPE-C or MH-C2)	• E. VF	• VR1 (V. SIZE) [5] [0] E. VF	1) Observing the viewfinder, adjust VR1 for normal picture amplitude.
3	Centering	• Alignment tape SP stairstep (MHPE-C or MH-C2)	• E. VF	• Centering Magnet	1) Adjust the centering magnet so that the gray scale image appears in the center of the viewfinder screen.
4	Focus	• Alignment tape SP stairstep (MHPE-C or MH-C2)	• E. VF	• Focus Magnet	1) Observing the viewfinder, adjust the focus magnet of the deflection yoke to obtain a clear picture in the center of the gray scale.
5	Brightness	• Iris: Closed (Lens capped)	• E. VF	• VR4 (BRIGHT) [5] [0] E. VF	1) Close the iris and adjust VR4 so that the raster of CRT is just barely visible in the viewfinder.
6	Contrast	• Alignment tape SP stairstep (MHPE-C or MH-C2)	• E. VF	• VR3 (CONT) [5] [0] E. VF	1) Observing the viewfinder screen, adjust VR3 so that gradation of the gray scale becomes the best.

SECTION 4
OVERALL WIRING AND BLOCK DIAGRAMS

4.1 OVERALL WIRING


LCD MODULE CN1
01-CN6
01 MAIN
CN5
NC
SW A
GND
D FF
TP FM
CN6
CAM PWR
TX
C OPR(L)
M STOP(H)
COUNT
S CLK
UNSW 5V
RESET
GND
S TAPE(H)
O E
REG 5V
COUNT UP
OPERATION UNIT
CN1
GND
GND
GND
NC
NC
EDIT (L)
TRIG ALM
TRIG SW
KEY A
KEY B
POWER SW
REG 5V
CN11
MODE CTL SW
CAM SW(B)
GND
CAM SW(A)
08 SENSOR
CN2
REEL SENSOR LED
SUP SENS
T U SENS
GND (SENS)
SV SW
REC SAFE SW
CN12
MODE CTL
LOAD (R)
GND
LOAD (F)
CN7
VIDEO REC(L)
REC INDICATE(L)
FADER REQUEST(L)
SP(L)/LP(H)
VIDEO PB(L)
FADER MODE(H)
A FADER CTL
TAPE END(H)
BATTERY ALARM(H)
NC
IND-1 PWB CN401
CN8
UNREG 9.6V
AC ADAPTER
ALARM SW
TRIGGER SW
CAM PWR CTL
GND
GND
TRIG PWB CN4,5
CN9
REG 5V
AUDIO FADER SIG
SIGNAL GND
MIC AUDIO
MIC GND
NC
MIC AMP PWB CN702
CN10
CTL HEAD
AUDIO HEAD
A/E HEAD
CTL HEAD (+)
CTL HEAD (−)
AUDIO GND
AUDIO HEAD (+)
AUDIO HEAD (−)
A/E HEAD (−)
A/E HEAD (+)
CN13
NC
UNREG 9.6V
CHECK
H CTL PULSE
CTL PULSE
LOAD P UP
TRACK P SET
TEST I
TEST O
GND
MECHACON
SERVO
MS1 CAPSTAN FWD (L)
MS2 CAPSTAN REV (L)
MS3 PAUSE (H)
MS4 SERVO MODE A
MS5 SERVO MODE I
MS6 SEARCH (H)
MS7 CAP M(H)/S(L)
MS8 REC CTL DUTY
MS9 CAP M REF
MS10 SP(L)/LP(H)
MS11 V PULSE ON (H)
MS12 RET REW
MS13 V REC MUTE (L)
SM1 CAPSTAN FG
SM2 DRUM FF
SM3 CTL PULSE
SM4 SW A
SM5 SW D
AUDIO EE (H) MA1
AUDIO MUTE (H) MA2
A REC MUTE (L) MA3
SP (L)/LP (H) MA4
SV SW MA5
RS3 CAPSTAN POWER
RS5 GND (MOTOR)
RS7 DRUM POWER
RS10 REG 8V
RS11 REG 5V
RS12 GND (SIGNAL)
SR2 CAPSTAN POWER UP
SR4 CAPSTAN REFERENCE
SR6 DRUM ERROR
SR8 DRUM POWER UP
MR1 POWER ON (H)
RM2 UNSW 5V
RM3 REG 5V
RM4 UNREG 9.6V
RM5 REG 8V
RM6 GND (MOTOR)
RM7 GND (SIGNAL)
RM8 BATTERY CHECK
RM9 EMERGENCY
REGULATOR
CAPSTAN POWER RS3
GND (MOTOR) RS5
DRUM POWER RS7
REG 8V RS10
REG 5V RS11
GND (SIGNAL) RS12
CAPSTAN POWER UP SR2
CAPSTAN REFERENCE SR4
DRUM ERROR SR6
DRUM POWER UP SR8
RA1
RA2
RA3
AUDIO
AM1 AUDIO EE (H)
AM2 AUDIO MUTE (H)
AM3 A REC MUTE (L)
AM4 SP (L)/LP (H)
AM5 SV SW
RA1 REG 5V
RA2 REG 8V
RA3 GND (SIGNAL)
CN14
CAP MOTOR
MR GND
FG 2
MR 5V
FG 1
HG 3(+)
COIL 1
HG 3(−)
HG 1(+)
HG 2(−)
HG BIAS(−)
HG BIAS(+)
HG 2(+)
COIL 3
HG 1(−)
COIL 2
M
LCD
CN1
CAM PWR
TX
C OPR(L)
M STOP(H)
COUNT
S CLK
UNSW 5V
RESET
GND
S TAPE (H)
O E
REG 5V
COUNT UP
CN18
33 LED
END SENS LED
34 END SENSOR
END SENS
BKT
CN4
NC
NC
END LED GND
MOTOR GND
END LED
GND
END SENS
CASSETTE SW
DRUM ON
DEW SENS
DRUM PG
DRUM P ERR
DRUM FG
DRUM REF
REG 5V
DRUM POWER
CN3
04 PRE/REC AMP
CN3
NC
GND
NC
NC
NC
D FF
GND
AV REC MUTE
REC 8V
SW C
SW A
SW D
SW B
NC
CN2
CH3 (F)
CH3 (S)
CH1 (F)
CH1 (S)
CH4 (F)
CH4 (S)
CH2 (F)
CH2 (S)
CN4
CN2
NC
PB COLOR
GND
REC COLOR
TP FM
PB 5V
REC FM
NC
PB FM
SP (L)/LP (H)
CN5
VIDEO
GND
REG 8V
REC (H)
CN15
CN1
GND
C SYNC
REMOTE SW
V PULSE
NC
REG 8V
AUDIO IN
V PULSE ON
AUDIO OUT
REMOTE
NC
NC
NC
NC
02 Y/C
S OUT SW
Y OUT
NC
COLOR OUT
GND
REG 8V
GND
REMOTE SW
NC
NC
AUDIO GND
AUDIO OUT
REMOTE SIG
NC
NC
GND
VIDEO
CN16
CN3
TP FM
V REC MUTE (L)
V LP PB (H)
SP (L)/LP (H)
V LP SPE (L)
V PAUSE (H)
D FF
S TAPE (H)
CN17
CN4
GND
V REC (L)
EDIT (L)
V PB (L)
V DET
REG 5V
V ALL MUTE
UNREG 9.6V
GND
NC
CN7
COLOR
GND
CN6
Y
GND
A
B
C
D
E
F
G
H
1
2
3
4
5
6


CAP MOTOR
LCD MODULE
E VF CONNECTOR
09 FLY CONN
10 OSC
FULL ERASE HEAD
33 LED
34 END SENSOR
03 D MDA
DEW SENSOR
TRIGGER SW
ALARM SW
BATTERY TERMINAL
DC JACK
07 TRIGGER
24 IND-1
DATE UNIT
TIMER BATTERY
OP BLOCK
IRIS DRIVER
ZOOM MOTOR
AF UNIT
23 ENCODER
04 PRE/REC AMP
DRUM ASS'Y
FLYING ERASE
PU HEAD
DRUM MOTOR
27 IND-2
ZOOM SW
FAST
SLOW
TELE
WIDE
28 SW
02 Y/C
06 JACK
S CONN
AV CONN
EARPHONE
REMOTE
21 VIDEO-1
05 MIC JACK
26 MIC AMP
MIC UNIT
22 VIDEO-2
DC-DC CONVERTER
25 FAW
NC
01-CN6
01-CN7
01-CN8
01-CN9

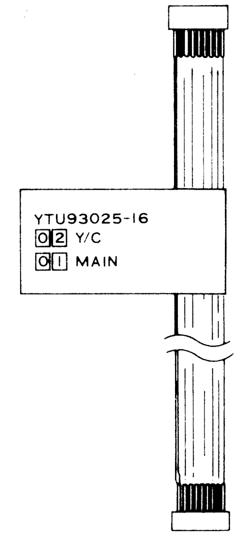
34	END SENSOR BKT
33	LED
28	SW
27	IND-2
26	MIC AMP
25	FAW
24	IND-1
23	ENC
22	VIDEO-2
21	VIDEO-1
10	OSC
09	FLY CONN
08	SENSOR
07	TRIGGER
06	JACK
05	MIC JACK
04	PRE AMP
03	D MDA
02	Y/C
01	MAIN
NO	PWB NAME

Patchcords

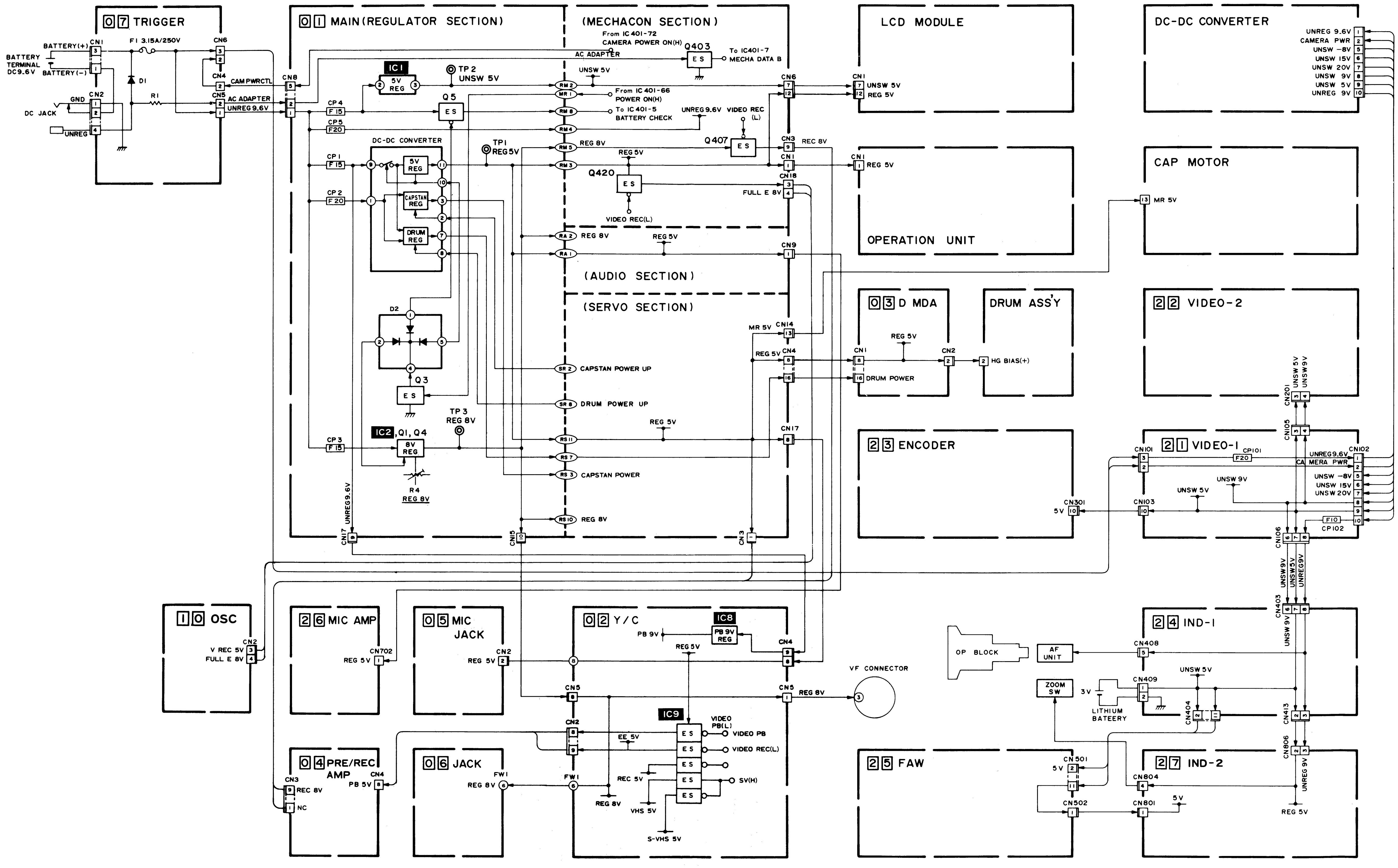
Patchcords are available for blue shaded portions of the overall wiring.

The patchcords are provided with tags to indicate connection points. Connect as indicated.

Example: As shown in the Figure, connect one side to MAIN board and the other to Y/C board.

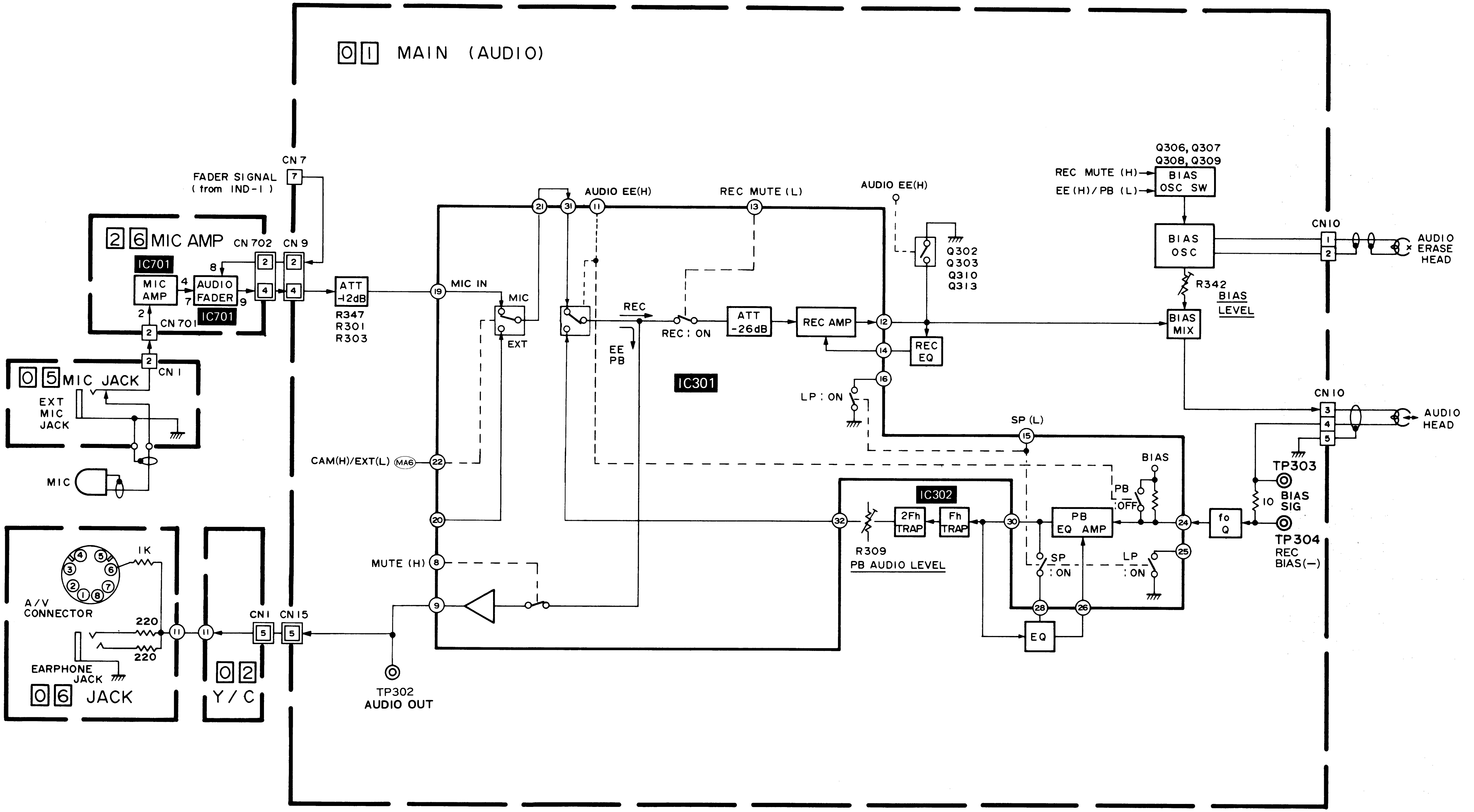

YTU93025-16
02 Y/C
01 MAIN

4.2 POWER SYSTEM BLOCK DIAGRAM

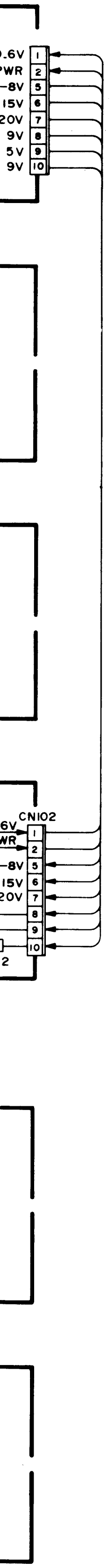


07 TRIGGER
BATTERY TERMINAL DC9.6V
BATTERY(+)
BATTERY(−)
GND
DC JACK
UNREG
CN1
CN2
CN4
CN5
CN6
F1 3.15A/250V
D1
R1
CAM PWRCTL
AC ADAPTER
UNREG 9.6V
01 MAIN (REGULATOR SECTION)
(MECHACON SECTION)
(AUDIO SECTION)
(SERVO SECTION)
IC1
5V REG
TP2 UNSW 5V
Q5
ES
CP4 F15
CP5 F20
CP1 F15
CP2 F20
CP3 F15
DC-DC CONVERTER
CAPSTAN REG
DRUM REG
TP1 REG5V
D2
Q3
IC2, Q1, Q4
8V REG
R4 REG 8V
TP3 REG 8V
From IC401-72 CAMERA POWER ON(H)
Q403
To IC401-7 MECHA DATA B
From IC401-66 POWER ON(H)
To IC401-5 BATTERY CHECK
UNREG9.6V
VIDEO REC (L)
Q407
Q420
VIDEO REC(L)
REC 8V
FULL E 8V
MR 5V
REG 5V
CAPSTAN POWER UP
DRUM POWER UP
CAPSTAN POWER
REG 8V
CN3
CN8
CN9
CN14
CN15
CN17
CN18
LCD MODULE
OPERATION UNIT
UNSW 5V
DC-DC CONVERTER
UNREG 9.6V
CAMERA PWR
UNSW −8V
UNSW 15V
UNSW 20V
UNSW 9V
UNSW 5V
UNREG 9V
CAP MOTOR
MR 5V
03 D MDA
DRUM POWER
DRUM ASS'Y
HG BIAS(+)
22 VIDEO-2
CN201
23 ENCODER
CN301
5V
21 VIDEO-1
CN101
CN102
CN103
CN105
CN106
CP101 F20
CP102 F10
UNREG9.6V
CAMERA PWR
UNSW 9V
10 OSC
V REC 5V
FULL E 8V
26 MIC AMP
CN702
05 MIC JACK
02 Y/C
IC8
PB 9V REG
PB 9V
IC9
VIDEO PB(L)
VIDEO PB
VIDEO REC(L)
EE 5V
REC 5V
VHS 5V
S-VHS 5V
SV(H)
FW1
VF CONNECTOR
04 PRE/REC AMP
NC
PB 5V
06 JACK
OP BLOCK
AF UNIT
ZOOM SW
3V
LITHIUM BATEERY
24 IND-1
CN403
CN404
CN408
CN409
CN413
25 FAW
CN501
CN502
27 IND-2
CN801
CN804
CN806
UNREG 9V

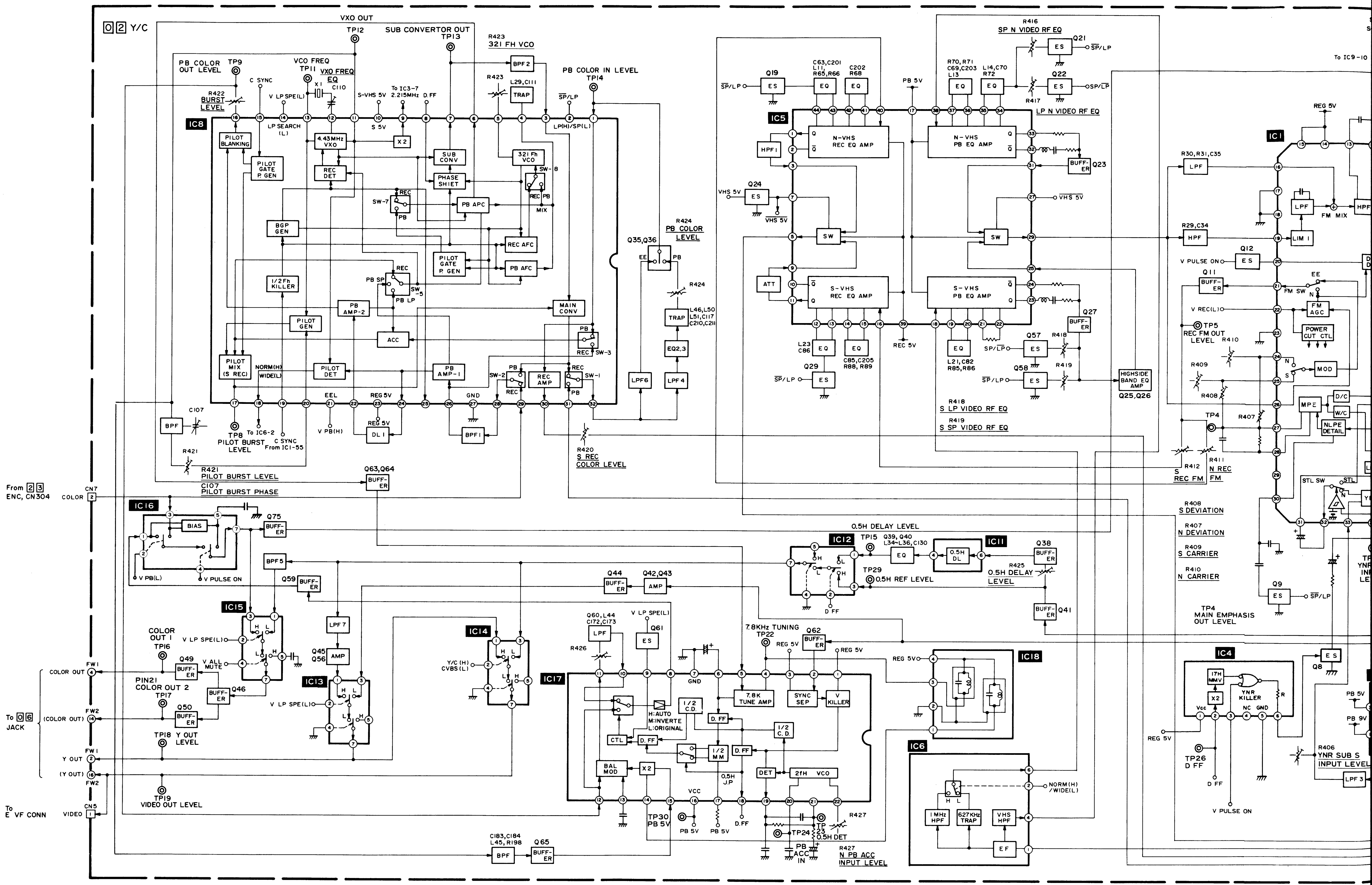
4.3 AUDIO BLOCK DIAGRAM

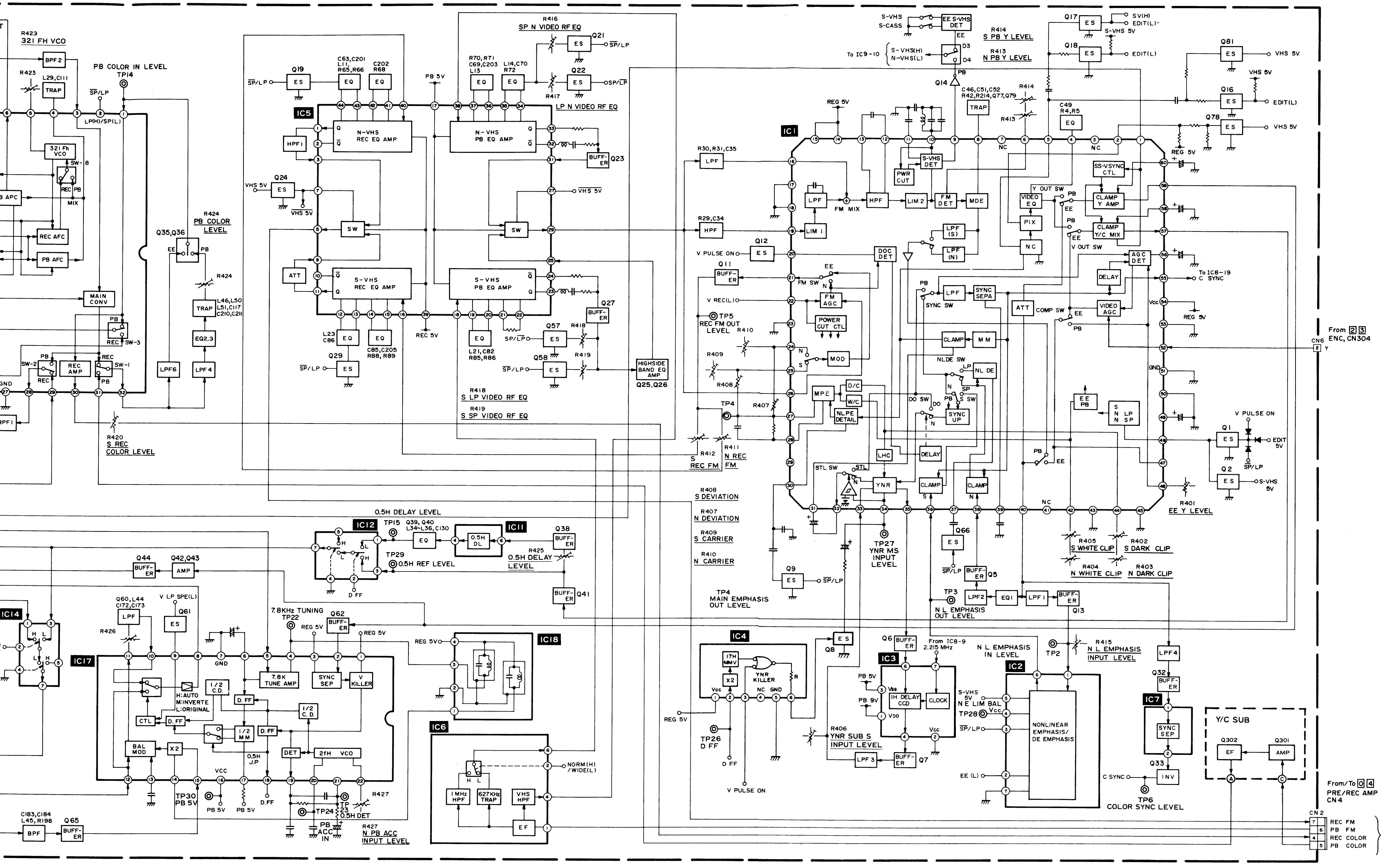


01 MAIN (AUDIO)
26 MIC AMP
IC701
MIC AMP
AUDIO FADER
CN 702
CN 9
CN 701
CN 7
FADER SIGNAL (from IND-1)
05 MIC JACK
CN 1
EXT MIC JACK
MIC
06 JACK
A/V CONNECTOR
EARPHONE JACK
1K
220
220
02 Y/C
CN1
CN15
ATT -12dB
R347
R301
R303
MIC IN
MIC
EXT
CAM(H)/EXT(L)
MA6
MUTE (H)
TP302
AUDIO OUT
AUDIO EE(H)
REC MUTE (L)
REC
EE
PB
REC : ON
ATT -26dB
REC AMP
REC EQ
IC301
LP : ON
Q302
Q303
Q310
Q313
SP (L)
IC302
2Fh TRAP
Fh TRAP
R309
PB AUDIO LEVEL
PB EQ AMP
EQ
BIAS
PB : OFF
SP : ON
LP : ON
Q306, Q307
Q308, Q309
REC MUTE (H)
EE (H)/PB (L)
BIAS OSC SW
BIAS OSC
R342
BIAS LEVEL
BIAS MIX
CN10
AUDIO ERASE HEAD
AUDIO HEAD
TP303
BIAS SIG
10
fo Q
TP304
REC BIAS(–)

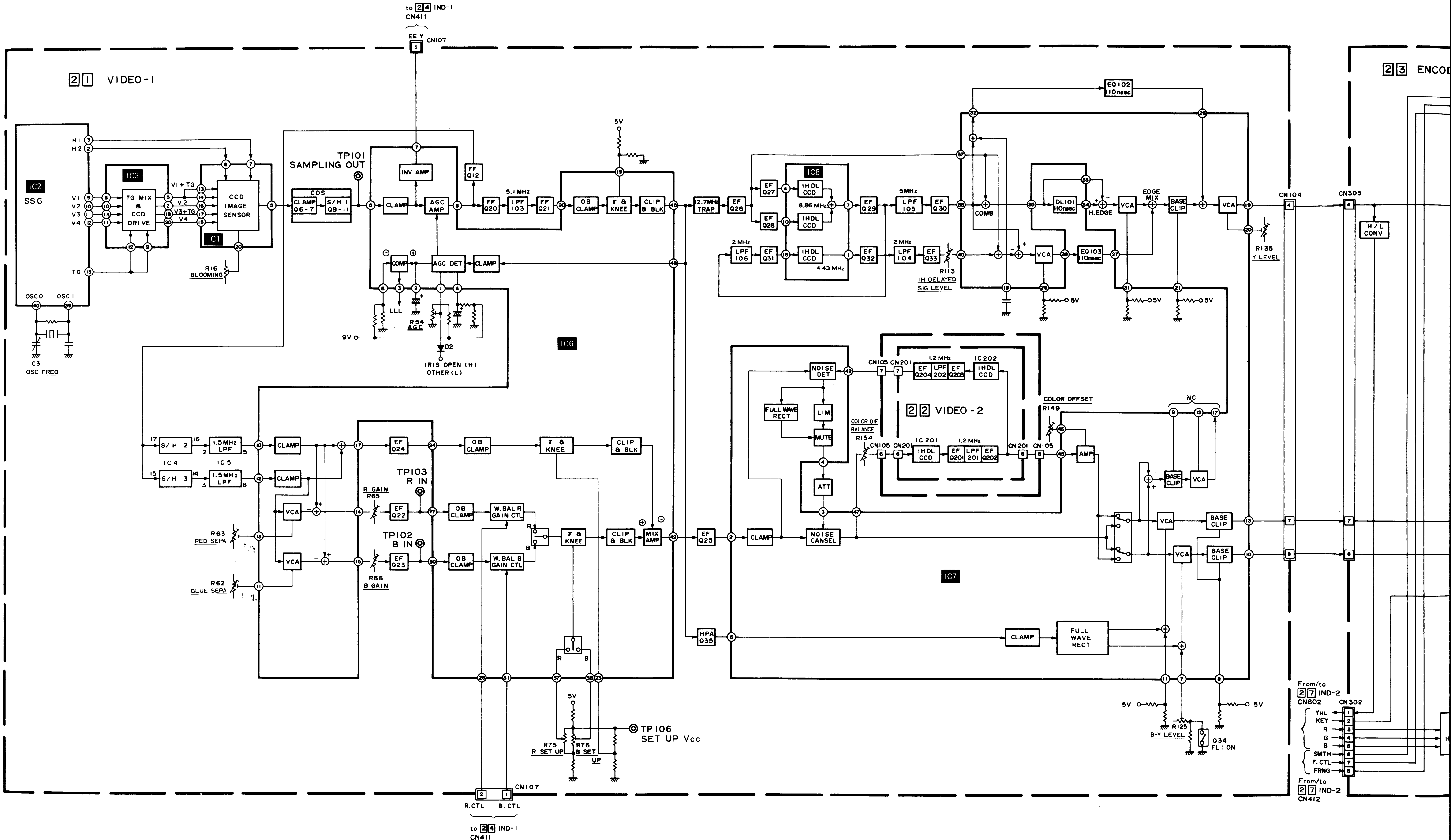


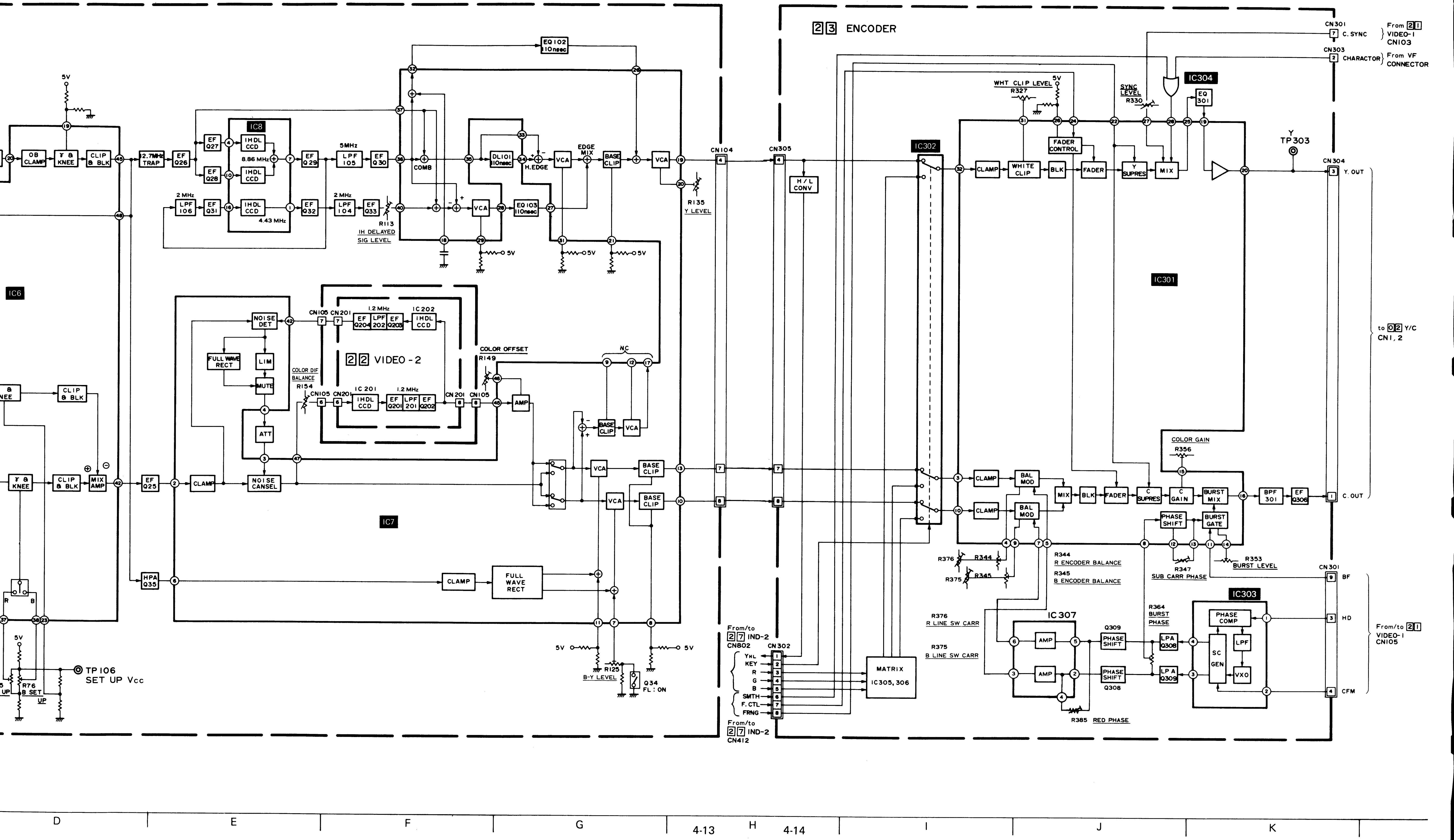
4.4 Y/C BLOCK DIAGRAM


02 Y/C
VXO OUT
TP12
SUB CONVERTOR OUT
TP13
R423
321 FH VCO
PB COLOR OUT LEVEL
TP9
R422
BURST LEVEL
C SYNC
VCO FREQ
TP11
VXO FREQ EQ
X1
C110
V LP SPE(L)
S-VHS 5V
To IC3-7 2.215MHz
D.FF
BPF 2
L29,C111
TRAP
PB COLOR IN LEVEL
TP14
SP/LP
LP(H)/SP(L)
IC8
LP SEARCH (L)
S 5V
PILOT BLANKING
PILOT GATE P. GEN
4.43MHz VXO
REC DET
X 2
SUB CONV
PHASE SHIFT
321 Fh VCO
SW-8
REC PB
MIX
SW-7
PB APC
BGP GEN
REC AFC
PILOT GATE P. GEN
PB AFC
1/2Fh KILLER
PB SP
SW-5
PB LP
PB AMP-2
MAIN CONV
PILOT GEN
ACC
SW-3
PILOT MIX (S REC)
NORM(H)
WIDE(L)
PILOT DET
PB AMP-1
SW-2
REC AMP
SW-1
EEL
REG 5V
GND
V PB(H)
DL 1
BPF1
TP8
PILOT BURST LEVEL
To IC6-2
C SYNC From IC1-55
BPF
C107
R421
R421 PILOT BURST LEVEL
C107 PILOT BURST PHASE
Q63,Q64 BUFFER
R424
PB COLOR LEVEL
Q35,Q36
EE PB
TRAP
L46,L50 L51,C117 C210,C211
EQ2,3
LPF6
LPF4
R420
S REC COLOR LEVEL
From 23 ENC, CN304
CN7 COLOR
IC16
BIAS
Q75 BUFFER
V PB(L)
V PULSE ON
BPF5
Q59 BUFFER
IC15
COLOR OUT 1
TP16
V LP SPE(L)
V ALL MUTE
Q49 BUFFER
Q46 BUFFER
PIN21 COLOR OUT 2
TP17
Q50 BUFFER
TP18 Y OUT LEVEL
TP19 VIDEO OUT LEVEL
To 06 JACK
COLOR OUT
(COLOR OUT)
Y OUT
(Y OUT)
FW1
FW2
To E VF CONN
CN5 VIDEO
LPF7
Q45 Q56 AMP
IC13
Q44 BUFFER
Q42,Q43 AMP
IC14
Y/C (H) CVBS (L)
IC17
Q60,L44 C172,C173 LPF
R426
V LP SPE(L)
Q61 ES
H:AUTO M:INVERTE L:ORIGINAL
CTL
D. FF
BAL MOD
X2
1/2 C.D.
1/2 MM
7.8K TUNE AMP
SYNC SEP
V KILLER
2fH VCO
DET
0.5H J.P
7.8KHz TUNING TP22
Q62 BUFFER
REG 5V
TP30 PB 5V
VCC
PB 5V
D.FF
TP24
TP 23 0.5H DET
PB ACC IN
R427
R427 N PB ACC INPUT LEVEL
C183,C184 L45,R198 BPF
Q65 BUFFER
0.5H DELAY LEVEL
IC12
TP15
Q39,Q40 L34~L36,C130
EQ
0.5H DL
IC11
Q38 BUFFER
R425 0.5H DELAY LEVEL
TP29 0.5H REF LEVEL
Q41 BUFFER
IC18
REG 5V
IC6
NORM(H) /WIDE(L)
1MHz HPF
627KHz TRAP
VHS HPF
EF
R416
SP N VIDEO RF EQ
Q21 ES
Q22 ES
R417
LP N VIDEO RF EQ
Q19 ES
C63,C201 L11, R65,R66
C202 R68
R70,R71 C69,C203 L13
L14,C70 R72
PB 5V
IC5
HPF1
N-VHS REC EQ AMP
N-VHS PB EQ AMP
Q23 BUFFER
Q24 ES
VHS 5V
SW
ATT
S-VHS REC EQ AMP
S-VHS PB EQ AMP
Q27 BUFFER
L23 C86 EQ
C85,C205 R88,R89
Q29 ES
REC 5V
L21,C82 R85,R86
Q57 ES
R418
Q58 ES
R419
HIGHSIDE BAND EQ AMP Q25,Q26
R418 S LP VIDEO RF EQ
R419 S SP VIDEO RF EQ
To IC9-10
REG 5V
IC1
R30,R31,C35 LPF
LPF
FM MIX
HPF
R29,C34 HPF
LIM 1
Q12 ES
V PULSE ON
Q11 BUFFER
EE
FM SW
V REC(L)
FM AGC
TP5 REC FM OUT LEVEL
R410
POWER CUT CTL
R409
MOD
R408
TP4
R407
MPE
D/C
W/C
NLPE DETAIL
R411 N REC FM
R412 S REC FM
STL SW
R408 S DEVIATION
R407 N DEVIATION
R409 S CARRIER
R410 N CARRIER
Q9 ES
TP4 MAIN EMPHASIS OUT LEVEL
Q8 ES
IC4
17H MMV
X2
YNR KILLER
NC GND
REG 5V
TP26 D FF
D FF
V PULSE ON
PB 5V
PB 9V
R406 YNR SUB S INPUT LEVEL
LPF 3


R423
321 FH VCO
BPF2
PB COLOR IN LEVEL
TP14
L29,C111
TRAP
SP/LP
LP(H)/SP(L)
321 Fh VCO
SW-8
REC PB
MIX
REC AFC
PB AFC
MAIN CONV
SW-3
SW-2
REC AMP
SW-1
R420
S REC COLOR LEVEL
Q35,Q36
R424
PB COLOR LEVEL
TRAP
L46,L50 L51,C117 C210,C211
EQ2,3
LPF6
LPF4
Q19
C63,C201 L11, R65,R66
C202 R68
PB 5V
IC5
HPF1
N-VHS REC EQ AMP
Q24
VHS 5V
SW
ATT
S-VHS REC EQ AMP
L23 C86
C85,C205 R88,R89
Q29
REC 5V
R416
SP N VIDEO RF EQ
Q21
Q22
R417
R70,R71 C69,C203 L13
L14,C70 R72
N-VHS PB EQ AMP
LP N VIDEO RF EQ
Q23
BUFF-ER
S-VHS PB EQ AMP
L21,C82 R85,R86
Q57
Q58
R418
R419
Q27
HIGHSIDE BAND EQ AMP
Q25,Q26
R418
S LP VIDEO RF EQ
R419
S SP VIDEO RF EQ
S-VHS
S-CASS
EE S-VHS DET
To IC9-10
S-VHS(H) N-VHS(L)
Q14
R414
S PB Y LEVEL
R413
N PB Y LEVEL
Q17
Q18
SV(H)
EDIT(L)
S-VHS 5V
Q81
VHS 5V
Q16
EDIT(L)
Q78
REG 5V
IC1
C46,C51,C52 R42,R214,Q77,Q79
TRAP
C49 R4,R5
EQ
R30,R31,C35
LPF
FM MIX
HPF
LIM 2
FM DET
MDE
S-VHS DET
PWR CUT
R29,C34
HPF
LIM 1
Q12
V PULSE ON
DOC DET
LPF (S)
LPF (N)
Q11
V REC(L)
FM SW
FM AGC
POWER CUT CTL
TP5
REC FM OUT LEVEL
R410
R409
R408
MOD
TP4
R407
MPE
D/C
W/C
NLPE DETAIL
LHC
STL SW
YNR
CLAMP
DELAY
SYNC UP
NL DE
NLDE SW
CLAMP
MM
PB
SYNC SW
LPF
SYNC SEPA
ATT
COMP SW
VIDEO EQ
Y OUT SW
PIX
NC
V OUT SW
SS-VSYNC CTL
CLAMP Y AMP
CLAMP Y/C MIX
AGC DET
DELAY
VIDEO AGC
To IC8-19 C SYNC
REG 5V
From 2 3 ENC, CN304
CN6
Y
EE PB
S N LP N SP
V PULSE ON
Q1
EDIT 5V
SP/LP
Q2
S-VHS 5V
R401
EE Y LEVEL
R412
S REC FM
R411
N REC FM
R408
S DEVIATION
R407
N DEVIATION
R409
S CARRIER
R410
N CARRIER
TP27
YNR MS INPUT LEVEL
Q9
Q66
Q5
LPF2
EQ1
LPF1
Q13
TP3
N L EMPHASIS OUT LEVEL
R405
S WHITE CLIP
R402
S DARK CLIP
R404
N WHITE CLIP
R403
N DARK CLIP
TP4
MAIN EMPHASIS OUT LEVEL
0.5H DELAY LEVEL
IC12
TP15
Q39, Q40 L34-L36,C130
IC11
0.5H DL
Q38
TP29
0.5H REF LEVEL
R425
0.5H DELAY LEVEL
D FF
Q41
Q44
Q42,Q43
AMP
IC14
IC17
Q60,L44 C172,C173
V LP SPE(L)
Q61
R426
7.8KHz TUNING TP22
Q62
REG 5V
7.8K TUNE AMP
SYNC SEP
V KILLER
H:AUTO M:INVERTE L:ORIGINAL
CTL
D. FF
1/2 C.D.
1/2 MM
0.5H J.P
BAL MOD
X2
DET
2fH VCO
TP30 PB 5V
VCC
PB 5V
D.FF
TP24
TP 23 0.5H DET
R427
N PB ACC INPUT LEVEL
PB ACC IN
C183,C184 L45,R198
Q65
BPF
IC18
IC6
1MHz HPF
627KHz TRAP
VHS HPF
EF
NORM(H) /WIDE(L)
IC4
17H MMV
YNR KILLER
REG 5V
TP26 D FF
V PULSE ON
Q8
R406
YNR SUB S INPUT LEVEL
IC3
Q6
From IC8-9 2.215 MHz
PB 5V
PB 9V
1H DELAY CCD
CLOCK
LPF3
Q7
N L EMPHASIS IN LEVEL
TP2
R415
N L EMPHASIS INPUT LEVEL
IC2
S-VHS 5V
N E LIM BAL
TP28
EE (L)
NONLINEAR EMPHASIS/ DE EMPHASIS
LPF4
Q32
IC7
SYNC SEP
Q33
INV
C SYNC
TP6
COLOR SYNC LEVEL
Y/C SUB
Q302
EF
Q301
AMP
From/To 0 4 PRE/REC AMP CN4
CN2
REC FM
PB FM
REC COLOR
PB COLOR

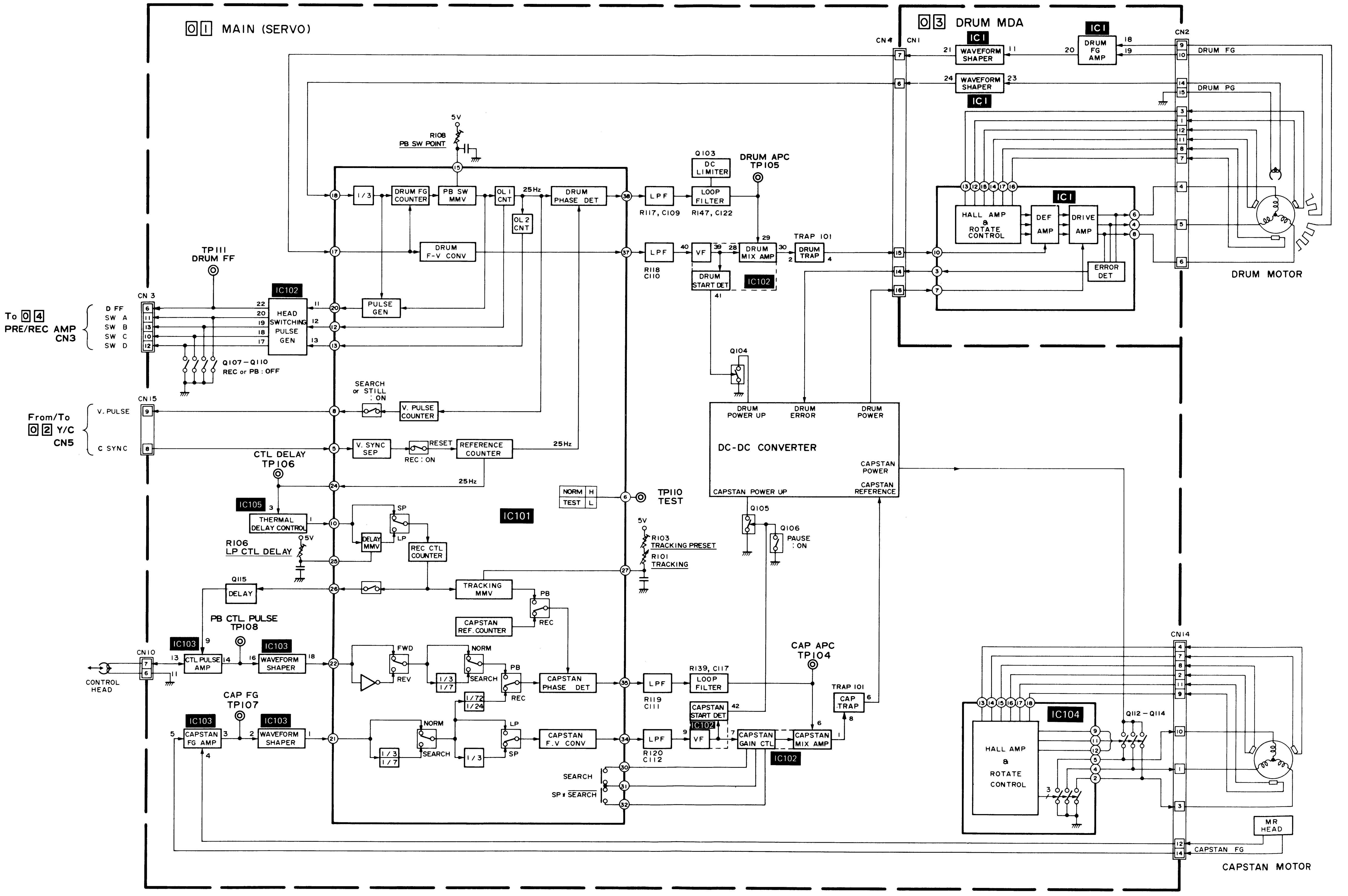
4.5 VIDEO BLOCK DIAGRAM


to 24 IND-1 CN411
EE Y CN107
21 VIDEO-1
23 ENCOD
IC2 SSG
H1 H2 V1 V2 V3 V4 TG
OSCO OSCI
C3 OSC FREQ
IC3 TG MIX & CCD DRIVE
V1+TG V2 V3+TG V4
CCD IMAGE SENSOR
IC1
R16 BLOOMING
CDS CLAMP Q6-7 S/H I Q9-11
TP101 SAMPLING OUT
CLAMP
INV AMP
AGC AMP
EF Q12
COMP
AGC DET
CLAMP
LLL
R54 AGC
9V
D2
IRIS OPEN (H) OTHER (L)
IC6
5.1MHz
EF Q20 LPF 103 EF Q21
5V
OB CLAMP
γ & KNEE
CLIP & BLK
12.7MHz TRAP
EF Q26
EF Q27 EF Q28
IC8
1HDL CCD
8.86 MHz
4.43 MHz
2 MHz LPF 106 EF Q31
EF Q29
5MHz LPF 105 EF Q30
EF Q32
2 MHz LPF 104 EF Q33
R113 1H DELAYED SIG LEVEL
EQ102 110nsec
COMB
DL101 110nsec
H.EDGE
VCA
EDGE MIX
BASE CLIP
EQ103 110nsec
R135 Y LEVEL
CN104 CN305
H/L CONV
S/H 2 IC4
S/H 3
1.5MHz LPF IC5
CLAMP
VCA
R63 RED SEPA
R62 BLUE SEPA
R GAIN R65
EF Q22
TP103 R IN
TP102 B IN
EF Q23
R66 B GAIN
EF Q24
OB CLAMP
W.BAL R GAIN CTL
W.BAL B GAIN CTL
γ & KNEE
CLIP & BLK
MIX AMP
EF Q25
HPA Q35
R B
5V
R75 R SET UP
R76 B SET UP
TP106 SET UP Vcc
R.CTL B.CTL CN107
to 24 IND-1 CN411
NOISE DET
FULL WAVE RECT
LIM
MUTE
ATT
NOISE CANSEL
CLAMP
CN105 CN201
1.2 MHz
EF Q204 LPF 202 EF Q203
IC202 1HDL CCD
22 VIDEO-2
COLOR DIF BALANCE R154
IC 201 1HDL CCD
EF Q201 LPF 201 EF Q202
COLOR OFFSET R149
AMP
NC
BASE CLIP
VCA
IC7
CLAMP
FULL WAVE RECT
5V
R125 B-Y LEVEL
Q34 FL: ON
From/to 27 IND-2 CN802
CN302
YHL KEY R G B SMTH F.CTL FRNG
From/to 27 IND-2 CN412



23 ENCODER
22 VIDEO-2
IC6
IC7
IC8
IC202
IC201
IC301
IC302
IC303
IC304
IC307
OB CLAMP
γ & KNEE
CLIP & BLK
2.7MHz TRAP
EF Q26
EF Q27
EF Q28
IHDL CCD
8.86 MHz
4.43 MHz
2 MHz
LPF 106
EF Q31
EF Q29
EF Q32
5MHz
LPF 105
EF Q30
LPF 104
EF Q33
R113
1H DELAYED SIG LEVEL
EQ102 110nsec
COMB
DL101 110nsec
H.EDGE
EDGE MIX
VCA
BASE CLIP
EQ103 110nsec
R135
Y LEVEL
5V
NOISE DET
FULL WAVE RECT
LIM
MUTE
ATT
NOISE CANSEL
CLAMP
CN105
CN201
1.2 MHz
EF Q204
LPF 202
EF Q203
EF Q201
LPF 201
EF Q202
COLOR DIF BALANCE
R154
COLOR OFFSET
R149
AMP
NC
MIX AMP
EF Q25
HPA Q35
R76
B SET UP
TP106
SET UP Vcc
R125
B-Y LEVEL
Q34
FL : ON
CN104
CN305
H/L CONV
CN301
C. SYNC
From 21 VIDEO-1 CN103
CN303
CHARACTOR
From VF CONNECTOR
WHT CLIP LEVEL
R327
SYNC LEVEL
R330
EQ 301
Y TP303
WHITE CLIP
BLK
FADER CONTROL
FADER
Y SUPRES
MIX
CN304
Y. OUT
C. OUT
to 02 Y/C CN1, 2
COLOR GAIN
R356
BAL MOD
C SUPRES
C GAIN
BURST MIX
BPF 301
EF Q306
PHASE SHIFT
BURST GATE
R376
R344
R375
R345
R344 R ENCODER BALANCE
R345 B ENCODER BALANCE
R347 SUB CARR PHASE
R353 BURST LEVEL
BF
HD
CFM
From/to 21 VIDEO-1 CN105
R364 BURST PHASE
R376 R LINE SW CARR
R375 B LINE SW CARR
Q309
Q308
LPA Q308
LPA Q309
PHASE COMP
SC GEN
LPF
VXO
R385 RED PHASE
MATRIX IC305, 306
From/to 27 IND-2 CN802
CN302
YHL
KEY
R
G
B
SMTH
F. CTL
FRNG
From/to 27 IND-2 CN412
D
E
F
G
H
I
J
K

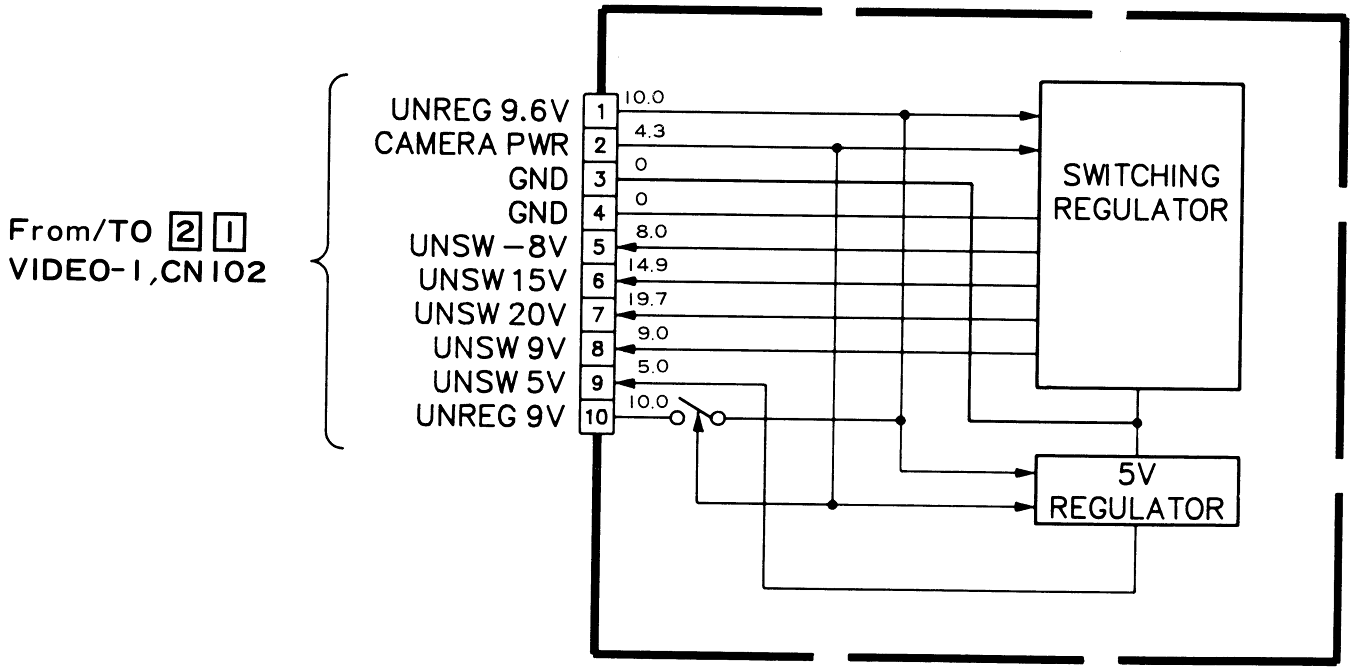
4.6 SERVO BLOCK DIAGRAM


01 MAIN (SERVO)
03 DRUM MDA
IC1
WAVEFORM SHAPER
DRUM FG AMP
DRUM FG
DRUM PG
CN4
CN1
CN2
HALL AMP & ROTATE CONTROL
DEF AMP
DRIVE AMP
ERROR DET
DRUM MOTOR
5V
R108
PB SW POINT
1/3
DRUM FG COUNTER
PB SW MMV
OL1 CNT
OL2 CNT
25Hz
DRUM PHASE DET
DRUM F-V CONV
Q103
DC LIMITER
DRUM APC TP105
LPF
LOOP FILTER
R117, C109
R147, C122
R118 C110
VF
DRUM MIX AMP
DRUM TRAP
TRAP 101
DRUM START DET
IC102
TP111 DRUM FF
CN3
To 04 PRE/REC AMP CN3
D FF
SW A
SW B
SW C
SW D
HEAD SWITCHING PULSE GEN
PULSE GEN
Q107–Q110 REC or PB : OFF
Q104
SEARCH or STILL : ON
V. PULSE COUNTER
CN15
From/To 02 Y/C CN5
V. PULSE
C SYNC
V. SYNC SEP
RESET
REC : ON
REFERENCE COUNTER
DRUM POWER UP
DRUM ERROR
DRUM POWER
DC-DC CONVERTER
CAPSTAN POWER
CAPSTAN REFERENCE
CAPSTAN POWER UP
CTL DELAY TP106
IC105
THERMAL DELAY CONTROL
NORM H
TEST L
TP110 TEST
IC101
SP
LP
DELAY MMV
REC CTL COUNTER
R106 LP CTL DELAY
R103 TRACKING PRESET
R101 TRACKING
Q105
Q106 PAUSE : ON
Q115
DELAY
TRACKING MMV
PB
REC
CAPSTAN REF. COUNTER
PB CTL PULSE TP108
IC103
CTL PULSE AMP
WAVEFORM SHAPER
CN10
CONTROL HEAD
FWD
REV
NORM
SEARCH
1/3 1/7
1/72 1/24
CAPSTAN PHASE DET
R139, C117
CAP APC TP104
R119 C111
CAP FG TP107
CAPSTAN FG AMP
CAPSTAN F.V CONV
CAPSTAN START DET
CAPSTAN GAIN CTL
CAPSTAN MIX AMP
CAP TRAP
R120 C112
SEARCH
SP# SEARCH
CN14
IC104
HALL AMP & ROTATE CONTROL
Q112–Q114
MR HEAD
CAPSTAN FG
CAPSTAN MOTOR

4.7 DC-DC CONVERTER BLOCK DIAGRAM

Note:

This block diagram is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.

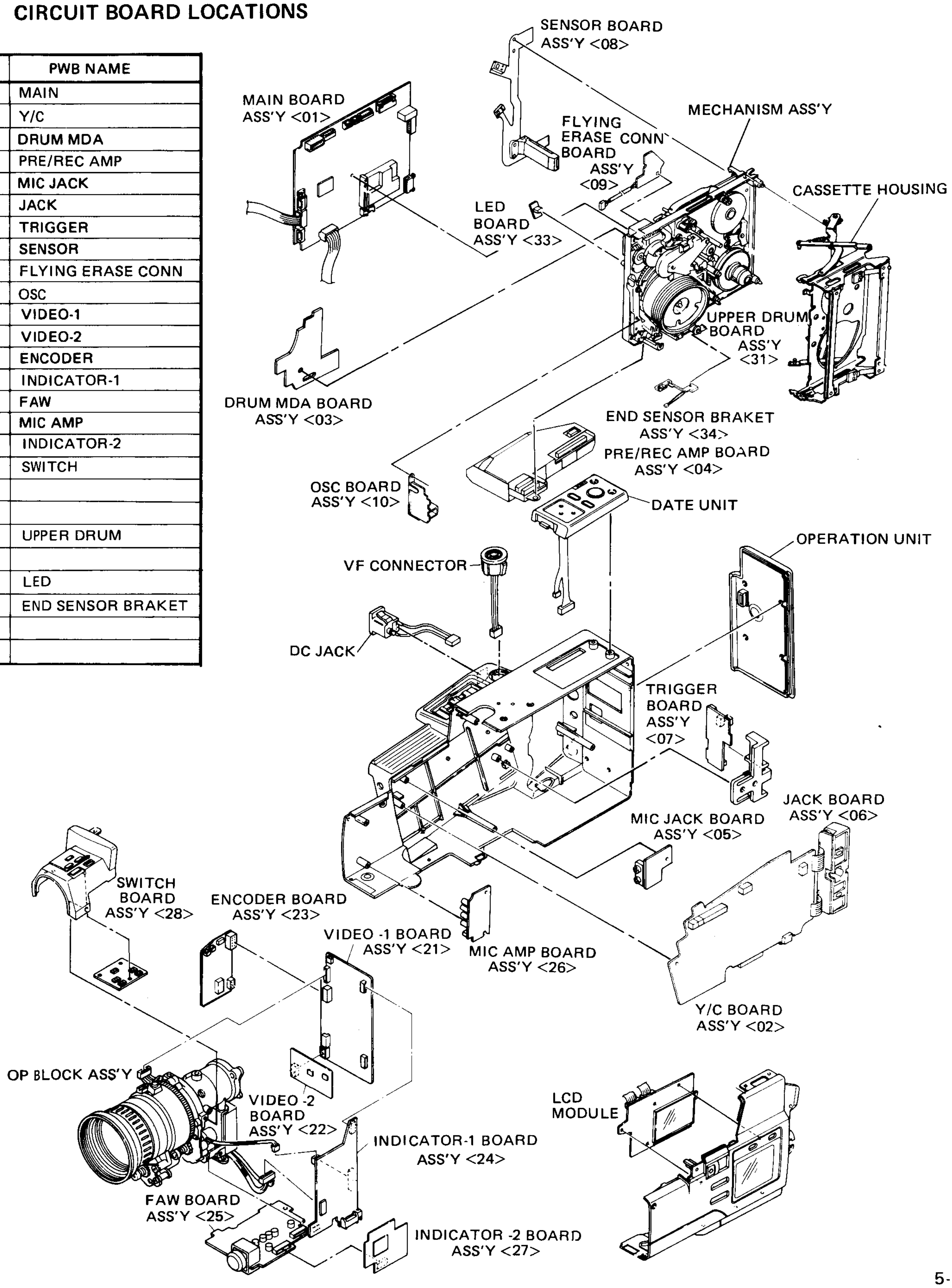


From/TO 2 1
VIDEO-1,CN102
UNREG 9.6V 1 10.0
CAMERA PWR 2 4.3
GND 3 0
GND 4 0
UNSW −8V 5 8.0
UNSW 15V 6 14.9
UNSW 20V 7 19.7
UNSW 9V 8 9.0
UNSW 5V 9 5.0
UNREG 9V 10 10.0
SWITCHING REGULATOR
5V REGULATOR

SECTION 5
DIAGRAMS AND CIRCUIT BOARDS

5.1 CIRCUIT BOARD LOCATIONS

No.	PWB NAME
01	MAIN
02	Y/C
03	DRUM MDA
04	PRE/REC AMP
05	MIC JACK
06	JACK
07	TRIGGER
08	SENSOR
09	FLYING ERASE CONN
10	OSC
21	VIDEO-1
22	VIDEO-2
23	ENCODER
24	INDICATOR-1
25	FAW
26	MIC AMP
27	INDICATOR-2
28	SWITCH
31	UPPER DRUM
33	LED
34	END SENSOR BRAKET

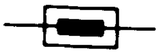

SENSOR BOARD ASS'Y <08>
MAIN BOARD ASS'Y <01>
FLYING ERASE CONN BOARD ASS'Y <09>
MECHANISM ASS'Y
CASSETTE HOUSING
LED BOARD ASS'Y <33>
UPPER DRUM BOARD ASS'Y <31>
DRUM MDA BOARD ASS'Y <03>
END SENSOR BRAKET ASS'Y <34>
PRE/REC AMP BOARD ASS'Y <04>
OSC BOARD ASS'Y <10>
DATE UNIT
OPERATION UNIT
VF CONNECTOR
DC JACK
TRIGGER BOARD ASS'Y <07>
JACK BOARD ASS'Y <06>
MIC JACK BOARD ASS'Y <05>
SWITCH BOARD ASS'Y <28>
ENCODER BOARD ASS'Y <23>
VIDEO -1 BOARD ASS'Y <21>
MIC AMP BOARD ASS'Y <26>
Y/C BOARD ASS'Y <02>
OP BLOCK ASS'Y
VIDEO -2 BOARD ASS'Y <22>
LCD MODULE
INDICATOR-1 BOARD ASS'Y <24>
FAW BOARD ASS'Y <25>
INDICATOR -2 BOARD ASS'Y <27>

5.2 SCHEMATIC DIAGRAM NOTES

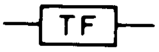
1. ▨ parts are safety related parts. When replacing them, be sure to use the specified parts.
2. Unit indications

No units: [Ω]	No units: [μF]	No units: [μH]
K: [kΩ]	P: [pF]	m: [mH]
M: [MΩ]		

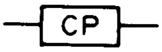
Thermistor



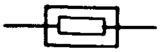
Thermal Fuse

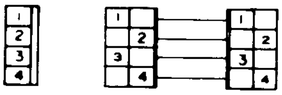


Circuit Protector

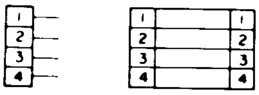


Posistor

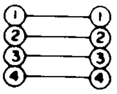




: Connector



: Board in connector

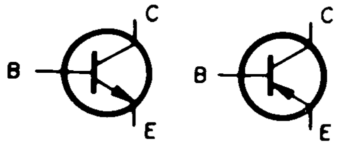


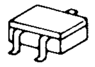
: Direct connection

COUNT UP : Active only at high.
COUNT DOWN : Active only at low.

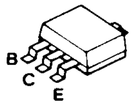
(VS) : Connected pattern in the board.
(MS) Abbreviations
(SM) V : Video M : Mechacon
S : Servo A : Audio
· VS : Signal flow from video to servo.

3. Chip transistor



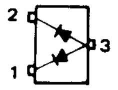


(Standard type)

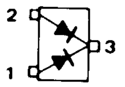


4. Chip diode

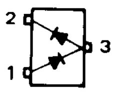
DAP202U
MA141WA

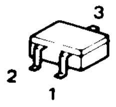


DAN202U
MA141WK

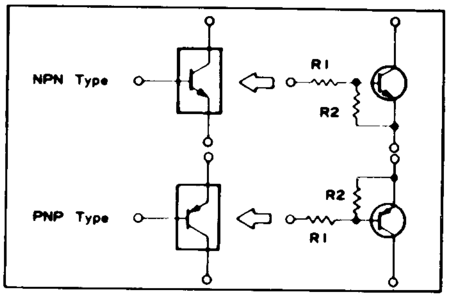


MA143
DA204U





5. Digital transistor



RESISTOR VALUES

JUNCTION	Part No.	R1 (kΩ)	R2 (kΩ)
PNP	DTA124EU	22	22
NPN	DTC144EU	47	47
	DTC124EU	22	22

Note: The digital transistor includes built in resistors.
It features small size and high reliability.
Both PNP and NPN types are available.

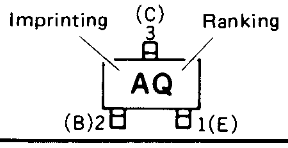
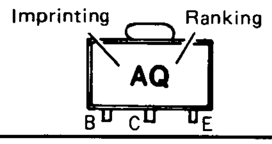
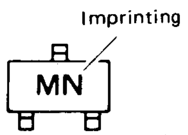
USES: INVERTER, INTERFACE, DRIVER CIRCUITS.

6. Definition of the surface and the back of circuit board diagrams
Front : Side on which discrete parts are assembled
Rear : Side on which chip parts are assembled

5.3 REPLACING SUBMINIATURE "CHIP" PARTS

1. Some resistors, shorting jumpers (0 Ω resistance), ceramic capacitors, transistors, and diodes are chip parts. These chip parts cannot be reused after they are once removed.
2. Additional compactness is achieved by using subminiature chip parts for certain circuit elements. When replacing these parts, note the cautions outlined below.
3. Chip transistors and diodes used in this model are outlined bellow.
4. Refer to parts list for correct part numbers.

- **Chip transistor and chip diode imprinting**

Transistors				Diodes	
Type	**Imprinting**	**Type**	**Imprinting**	**Type**	**Imprinting**
DTA124EU	15	2SB798	DM, DL, DK	DAN202U	N
DTA144EU	16	2SC2412K(S)	BS	DAP202K	P
DTC124EU	25	2SC3931	UB~UD	DAP202U	P
DTC124XU	45	2SC3936(BC)	KB, KC	DA204U	K
DTC144EU	26	2SC4081	BQ~BS	FMN1	N1
FMC2	C2	2SC4097(QR)	CQ, CR	IMN10	N10
FMG1	G1	2SC4098(PQ)	AP, AQ	MA141WA	MN
FMG2	G2	2SC4099(NP)	JN, JP	MA141WK	MT
FMQ1	Q1	2SC4176	B33, B34, B35	MA143	MC
FMS2	S2	2SC4177(56)	L5, L6	MA3075H	7.5H
FMU1	U1	2SC4178(34)	F13, F14	MA704	MIK
FMW1	W1	2SC4181	L17, L18	MA714	MIP
FMW3	W3	2SD1819	YR~YS	MA716	M1U
FMY1	Y1	2SJ146	4D	RB451F	3C
2SA1036K(QR)	HQ~HR	2SK198P,Q	10P, 10Q	RD7.5M-T1B2	752
2SA1532(BC)	EB, EC	2SK620	3N	RD7.5M-T2B2	752
2SA1576	FQ~FS	2SK665	30	RLZ5.6B	753
2SA1577	HQ~HS	3SK179	V03	RLZ8.2B	822
2SA1610	Y33, Y34			RD7.5MB3	125
2SA1611(56)	M5, M6			RD8.2MB2	165
2SB1218(RS)	AR, AS				
2SB624	BV4				
					

5.4 KEY TO ABBREVIATIONS

A	AC	: Alternating Current
	ACC	: Automatic Color Control
	A/CTL	: Audio/Control
	ADC	: Analog to Digital Converter
	ADD	: Adder
	ADJ	: Adjustment
	AE	: Audio Erase
	AEF	: Automatic Editing Function
	AF	**: Auto Focus**
	AFC	: Automatic Frequency Control
	AFT	: Automatic Fine Tuning
	AGC	: Automatic Gain Control
	AH	: Audio Head
	AL	**: After Loading, Allways**
	ALC	: Automatic Light Compensation Automatic Level Control
	ALM	: Alarm
	ALU	: Arithmetic Logic Unit
	AM	: Amplitude Modulation
	AMP	: Amplifier
	ANT	: Antenna
	APC	: Automatic Pedestal Control Automatic Phase Control
	APL	: Average Picture Level
	A S M	: Audio/Servo/Mechacon
	ASS'Y	: Assembly
	ATT	: Attenuator
	AUD	: Audio
	AUTO	: Automatic
	AUX	: Auxiliary
B	B	**: Base, Blue**
	BAL	: Balance
	BATT	: Battery
	BBD	: Bucket Brigade Device
	BCD	: Binary Coded Decimal
	BEG	: Beginning
	BF	**: Behind Focus**
	BFP	: Burst Flag Pulse
	BPF	**: Band Pass Filter**
	BIT	: Binary Digit
	BLK	: Black, Blanking
	BLU	: Blue
	BNC	: Bayonet Connector
	BOT	: Beginning of Tape
	BPF	: Bandpass Filter
	BRK	: Brake
	BRN	: Brown
	BRT	: Brightness
	BT	: Band Tuning
	BUFF	: Buffer
	BW or B/W	: Black and White
C	C	**: Capacitance, Collector, Color, Character**
	CA	**: Camera**
	CAL	: Calibration
	CAP	: Capstan, Capacitor
	CAR	: Carrier
	CARR	: Carrier
	CASS	: Cassette
	CC	: Cassette Compartment
	CCD	: Charge Coupled Device
	CCT	: Circuit
	CdS	: Cadmium Sulphide
	CD	: Count Down
	CE	: Chip Enable
	CF	**: Ceramic Filter, Color Frame, Correct Focus**
	CH	: Channel
	CHG	: Charge
	CHROMA	: Chrominance
	CLK	: Clock
	CLR	: Clear
	CMD	: Command
	CMOS	: Complementary Metal Oxide Semiconductor
	CNT	: Count, Counter
	COL	: Color
	COM	: Common
	COMB	: Combination Comb Filter
	COMP	: Comparator Composite Compensation
	CONN	: Connector
	CONV	: Converter
	CP	: Circuit Protector Clamp Pulse
	CPC	: Capstan Phase Control
	CPU	: Central Processing Unit
	CTC	: Crosstalk Cancel
	CTL	: Control
D	D	: Drum, Digital, Diode, Drain
	DAC	: Digital to Analog Converter
	dB	: Decibel
	DC	: Direct Current
	DD	: Direct Drive
	DEC	: Decoder
	DEMOD	: Demodulator
	DEMUX	: Demultiplexer
	DET	: Detector
	DEV	: Deviation
	DFRS	: Drum Free Running Stop
	DG	: Differential Gain
	DIF	: Differential
	DISCR	: Discriminator
	DL	: Delay Line
	DOC	: Dropout Compensator
	DOD	: Drop Out Detector
	DP	: Differential Phase
	DPC	: Drum Phase Control
	DYAC	: Dynamic Aperture Control
E	E	: Edit, Emitter
	EDP	: Electronic Data Processing
	E-E	: Electric to Electric
	EF	: Emitter-Follower
	EMP	: Emphasis
	EN	: Enable
	ENC	: Encoder
	ENV	: Envelope
	EOT	: End of Tape
	EP	: Extended Play
	EQ	: Equalizer
	ES	: Electronic Switch
	ESNS	: End Sensor
	EXP	: Expander
	EXT	: External
F	F	: Farad, Fuse
	F ADV	: Frame Advance
	FDP	: Fluorescent Display Panel
	FE	: Full Erase
	FET	: Field Effect Transistor
	FF	**: Fast Forward, Front Focus** Flipflop
	FG	: Frequency Generator
	FM	: Frequency Modulation
	FR	: Full Recording, Frame, Fusible Resistor
	FREQ	: Frequency
	F-V CONV	: Frequency to Voltage Converter
	FWD	: Forward
	FWD S	: Forward Search
G	G	: Green, Gate, Grid
	GEN	: Generator
	GND	: Ground
	GRN	: Green
	GRY	: Gray
H	H	: High, Henry, Hour
	HBF	: Horizontal Burst Flag
	HD	: Horizontal Drive
	HPF	: Highpass Filter
	Hz	: Herz

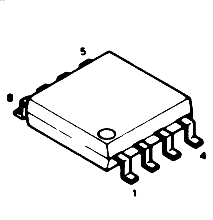
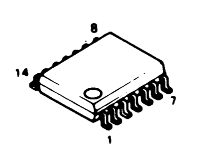
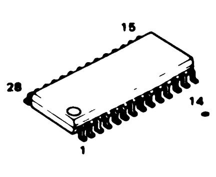
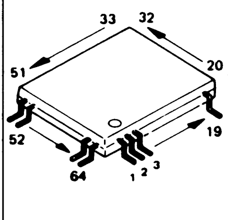
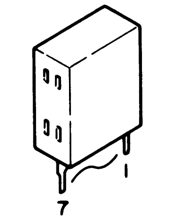
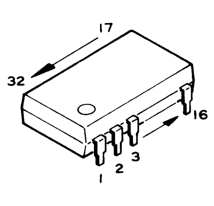
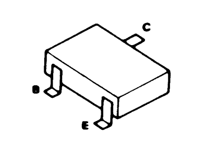
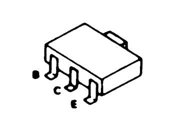
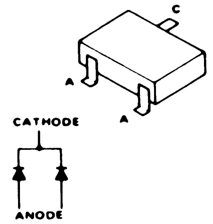
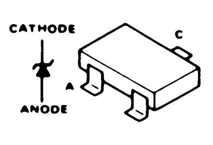
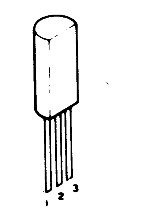
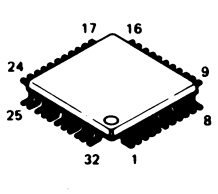
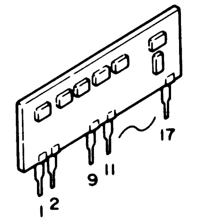
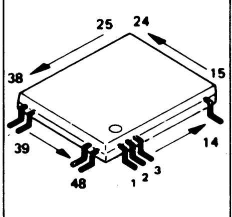
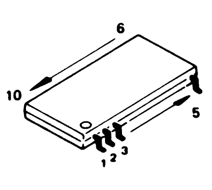
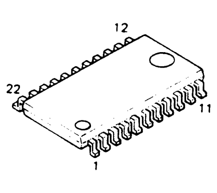
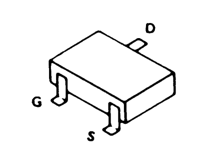
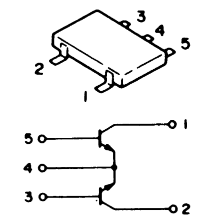
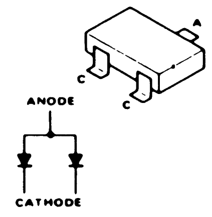
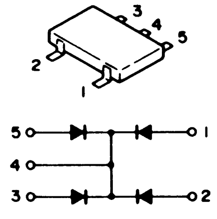
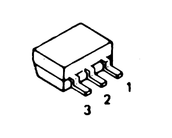
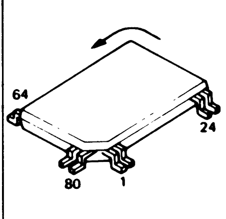
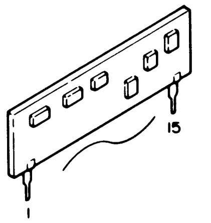
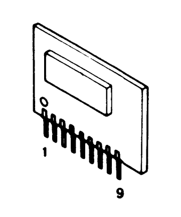
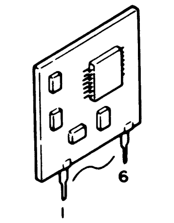
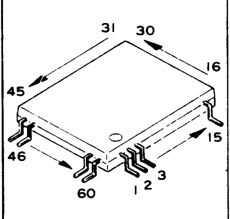
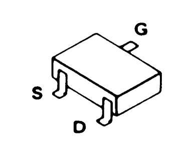
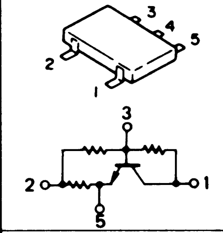
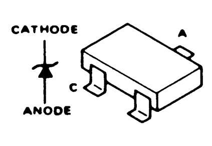
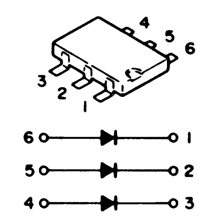
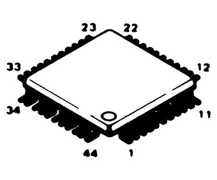
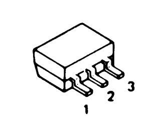
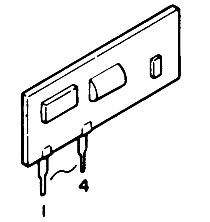
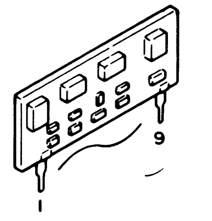
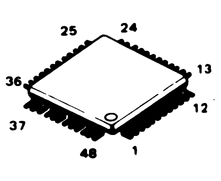
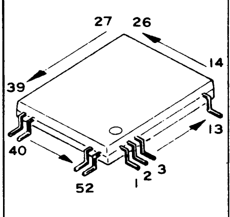
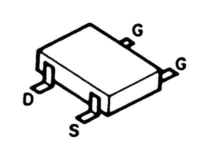
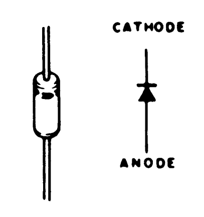
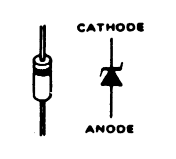
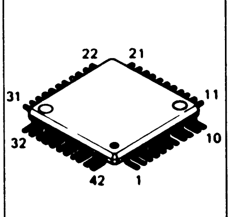
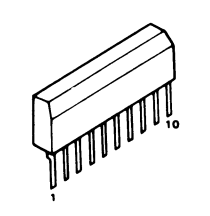
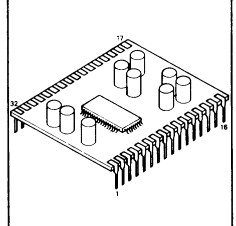
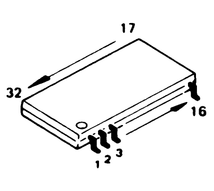
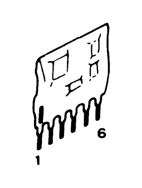
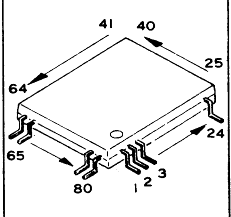
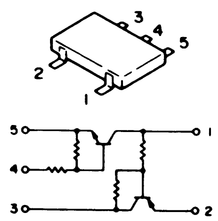
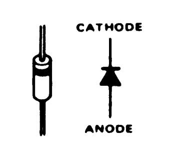
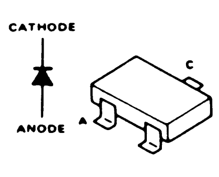
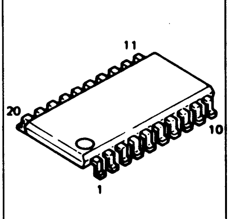
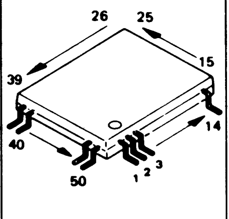
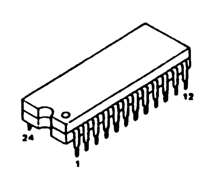
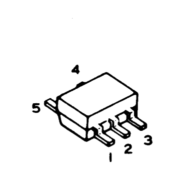
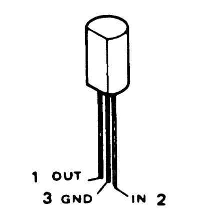
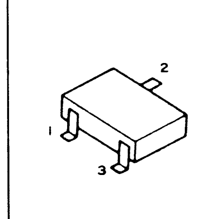
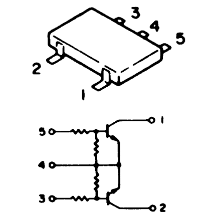
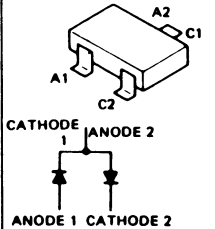
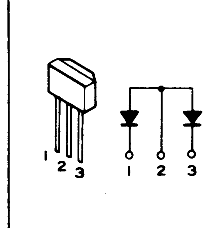
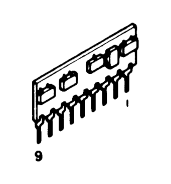
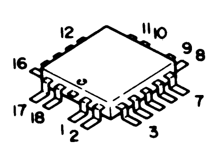
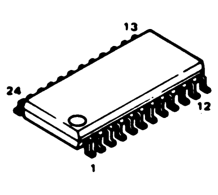
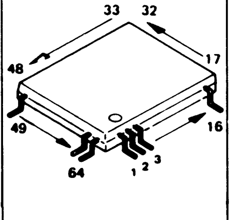
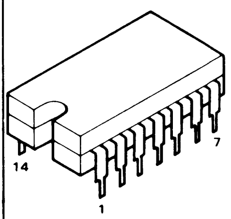
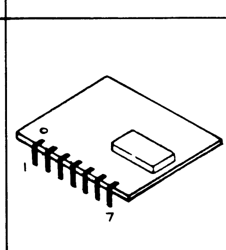
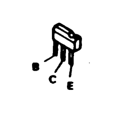
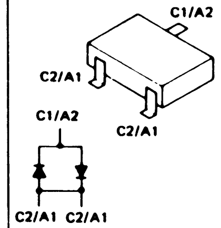
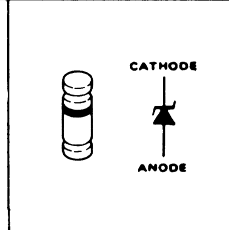
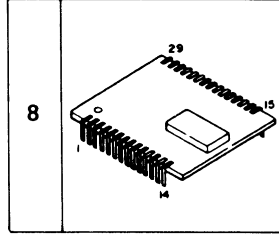
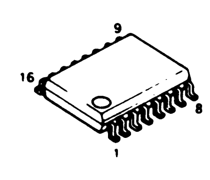
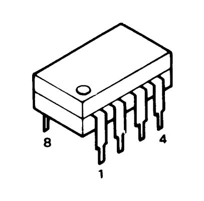
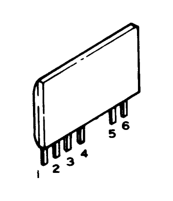
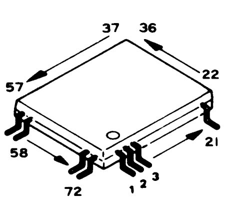
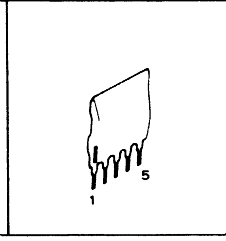
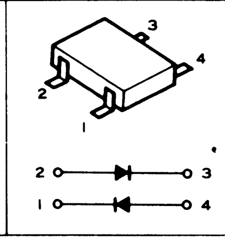
I	IC	: Integrated Circuit
	ID	: Identification (Pulse)
	IF	: Intermediate Frequency
	IFR	: Infrared
	IFT	: Intermediate Frequency Transformer
	IND	: Indicator
	INH	: Inhibit
	INS	: Insert
	INT	: Internal, Interrupt
	INV	: Inverter, Interleave
	I/O	: Input/Output
	IR	: Infrared
L	L	: Low, Left
	LCD	: Liquid Crystal Display
	LED	: Light Emitting Diode
	LIM	: Limiter
	LIN	: Linearity
	LLD	: Low Light Detector
	LOAD	: Loading (Cassette)
	LP	: Long Play
	LPF	: Lowpass Filter
	LSB	: Lower Sideband
M	M	: Motor, Mega
	MAX	: Maximum
	MDA	: Motor Drive Amplifier
	MECHACON	: Mechanism Control
	MIC	: Microphone
	MIN	: Minimum
	MIX	: Mixer, Mixing
	MMV	: Monostable Multivibrator
	MNOS	: Metal Nitride Oxide Semiconductor
	MOD	: Modulation, Modulator
	MODEM	: Modulator-Demodulator
	MON	: Monitor
	MOS	: Metal Oxide Semiconductor
	MPX	: Multiplexer, Multiplex
	MS	: Mode Select
	MUT	: Muting
N	NAND	: Not And
	NC	: Not Connected, Normally Closed
	NFB	: Negative Feedback
	NLN	: Non-Linear
	NO	: Normally Open
	NOR	: Normal, Not-Or
	NR	: Noise Reduction
O	OP	: Operation
	OPAMP	: Operational Amplifier
	ORG	: Orange
	OSC	: Oscillator
P	PB	: Playback
	PC	: Photocoupler, Pulse Counter
	PCM	: Pulse Code Modulation
	PG	: Pulse Generator
	PGM	: Program
	PI	: Photo Interrupter
	PIC	: Picture Control
	PIF	: Picture Intermediate Frequency
	PLA	: Programmable Logic Array
	PLL	: Phase Locked Loop
	PNK	: Pink
	POS	: Position
	p-p	: Peak-to-Peak
	PR	: Pinch Roller
	PREAMP	: Preamplifier
	PRL	: Preroll
	P/S	: Pause/Still
	PSC	: Pulse Swallowing Control
	PU	: Pickup
	PUT	: Programmable Unijunction Transistor
	PWB	: Printed Wiring Board
	PWM	: Pulse Width Modulation
	PWR	: Power
Q	Q	: Quality Factor
R	R	: Red, Right
	RA	: Resistor Array
	RAM	: Random Access Memory
	REC	: Recording
	REF	: Reference
	REG	: Regulated, Regulator
	REM	: Remote
	REMOCON	: Remote Control (Unit)
	REV	: Reverse
	REV S	: Reverse Search
	REW	: Rewind
	RF	: Radio Frequency
	ROM	: Read Only Memory
	R/P	: Record/Playback
	RPT	: Repeat
	RS FF	: RS Flipflop
	RST	: Reset
	RT	: Rotary Transformer
	RUN	: Running
	RY	: Relay
S	SAW	: Sawtooth, Surface Acoustic Wave
	SC	: Subcarrier, Simulcast
	SCH	: Search
	SEL	: Select, Selector
	SENS	: Sensor
	SEP	: Separator
	SF	: Source Follower
	SFF	: Short Fast Forward
	SIF	: Sound Intermediate Frequency
	SN	: Signal to Noise Ratio
	SOL	: Solenoid
	SOS	: Sound on Sound
	SP	: Standard Play
	SR	: Supply Reel
	SREW	: Short Rewind
	S/S	: Slow/Still
	SSG	: Sync Signal Generator
	SSNS	: Start Sensor
	STD	: Strobe Data, Standard
	SUP	: Supply
	SW	: Switch
	SWD	: Switched
	SYNC	: Synchronization
T	TAL	: Tally
	TBC	: Time Base Corrector
	TC	: Tension Control, Time Code
	TEN	: Tension
	TF	: Thermal Fuse
	TIM	: Timing
	TK	: Tracking
	TNR	: Tuner
	TP	: Test Point
	TPZD	: Trapezoid
	TR	: Transistor, Trimmer
	TRANS	: Transformer
	TU	: Take-up
U	UL	: Unloading
	UNREG	: Unregulated
	UNSW	: Unswitched
V	V	: Vertical, Volt
	VACT	: Video Action
	VCO	: Voltage Controlled Oscillator
	VD	: Vertical Drive
	VIF	: Video Intermediate Frequency
	VLT	: Violet
	VR	: Variable Resistor
	VS	: Video and Sync
	VSCH	: Variable Search
	VV	: Video to Video
	VXO	: Variable Crystal Oscillator
W	W	: Watt
	WARN	: Warning
	W & D	: White and Dark
	WHT	: White
	WV	: Working Voltage
X	XTAL	: Crystal
Y	Y	: Luminance
	YEL	: Yellow

5.5 SEMICONDUCTOR SHAPES

	NAME	L
	IC	
A	AN8009	6E
	AN2276S	5D
	AN2276S-X2	5D
	AN3592S	2F
	AN78L05	2A
	AN2512S	1B
B	BA226F	1A
	BA6452F	7C
	BA6993F	1A
	BA7288K	4A
	BA7601K	4A
	BA7606F	8B
	BA7757BK	2B
	BU3767K	4A
	BU4584BF	1B
C	CXK58256MM	1C
	CXK58257M	1C
H	H8B7101A	5C
	H8D7046	4C
	H8D7051A	8A
	H8D7098	3C
	H8D7102	3E
	H8D7103	3E
	H8D7122	1E
	H8D7128	5E
L	LA7213	4D
	LA7330	6C
	LM324NS	1B
	LM2904E	1A
M	MC8181D	1E
	MN12821	6F
	MSM6829MS-XE1	1A
	MSM6831MS	6A
	MSM6831MS-XE	6A
	MSM6847MS-XE1	1A
	MSM6965-3MS-XE1	1A
	MSM6985MS	1A
	MSM6985MS-XK	1A
	M37412E5-003FP	8E
	M37412M4-004FP	8E
	M37412M4-104FP	8E
	M52074FP	3F
	M5236ML	3A
	M52410FP	6A
	M52434FP	5A
	M5282FP	1A
	M54543ASL	5B
	M54641FP	2E
	M5M5256BFP	1C
	M5M5256FP	1C

	NAME	L
N	NJM2234M	1A
	NJM2244M	1A
	NJM2245M	1A
	NJM2246M	1A
	NJM2904E	1A
	NJM4560M	8C
R	RC4560M	8C
S	SRM20256LM	1C
	S-81252HG	2A
	S-8054HN	4B
T	TC4S69F	6D
	TC4S71F	6D
	TC4S81F	6D
	THE326A	7F
	TME336A	4C
U	UPC324G2	1B
	UPC2370GH	2D
	UPC2371GH	2D
	UPD6147G	6A
	UPD6148GS	7C
	UPD9319CGC	4E
	UPD43256AGU	1C
V	VC2038	4E
	VC2041	7C
	VC2041-X2	7C
	VC2079B	5B
	VC2085	5F
	VC5026G	6A
X	XRA10324F	1B
	6VT08	3E
	TRANSISTOR	
D	DTA124EU	1G
	DTA144EU	1G
	DTC124XU	1G
	DTC144ES	7G
	DTC144EU	1G
F	FMG2	6G
	FMQ1	6G
	FMS2	2H
	FMU1	3H
	FMW3	2H
2SA	2SA1036K	1G
	2SA1037K	1G
	2SA1532	1G
	2SA1576	1G
	2SA1577	1G

	NAME	L
2SB	2SB1009	7G
	2SB1218	1G
	2SB624-T1BBV4	1G
	2SB624-T2BBV4	1G
	2SB798	1H
2SC	2SC2412K	1G
	2SC3931	1G
	2SC3936	1G
	2SC4081	1G
	2SC4097	1G
	2SC4098	1G
	2SC4099	1G
	2SC4177	1G
	2SC4178	1G
	2SC4181	1G
2SD	2SD1819	1G
2SJ	2SJ146	2G
2SK	2SK198	3G
	2SK665	2G
	DIODE	
D	DAN202K	1I
	DAN202U	1I
	DAP202U	2I
	DA204U	6I
	DCB010	1I
E	ERA15-06	5I
	ERA81-004-F	4I
F	FMN1	2J
M	MA141WA	2I
	MA141WK	1I
	MA143	6I
	MA152WK	1I
	MA704	5I
	MA714	8I
R	RB451F	1I
	RD6.8M(B1)	1J
	RD6.8M(B2)	1J
	RD7.5M(B2)	1J
	RD8.2M(B1)	1J
	RD8.2M(B2)	1J
	RD8.2M(B3)	1J
	RLZ5.6B	7J
	RLZ8.2B	7J

	IC						TRANSISTOR		DIODE	
	A	B	C	D	E	F	G	H	I	J
1										
2										
3										
4										
5										
6										
7										
8										

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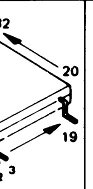
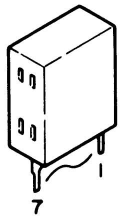
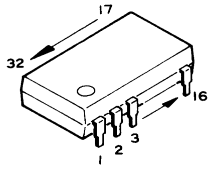
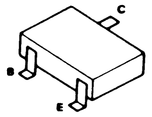
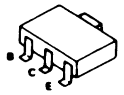
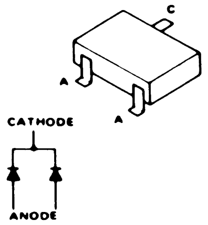
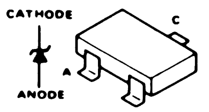
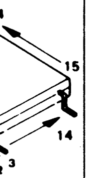
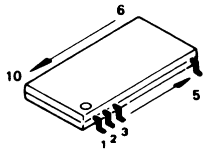
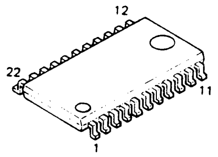
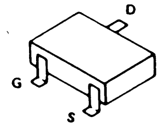
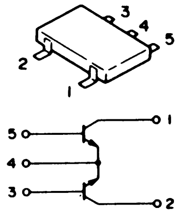
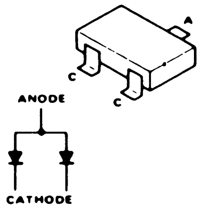
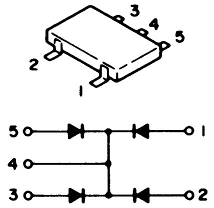
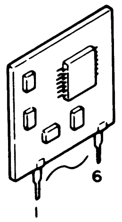
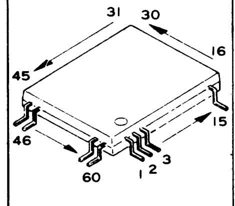
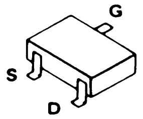
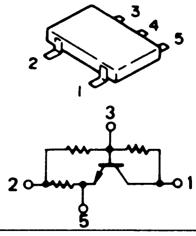
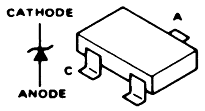
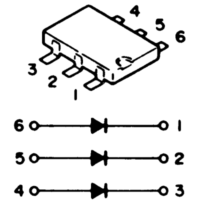
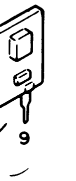
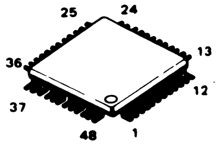
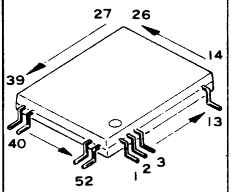
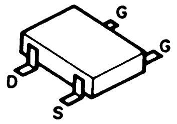
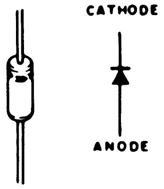
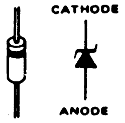
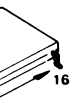
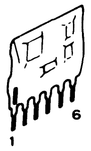
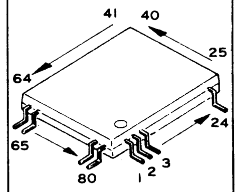
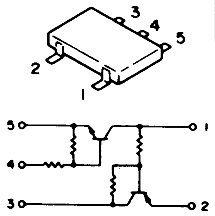
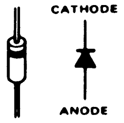
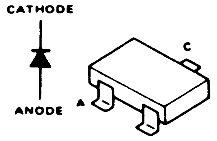
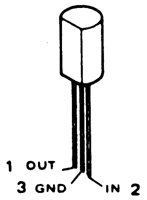
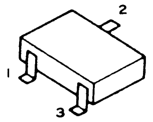
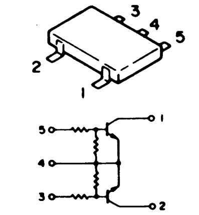
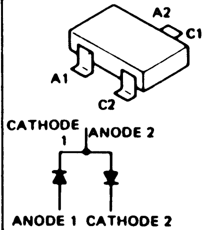
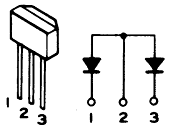
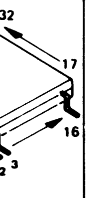
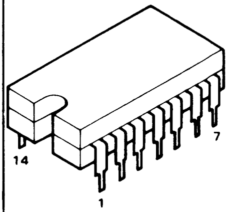
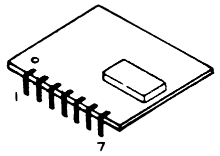
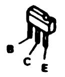
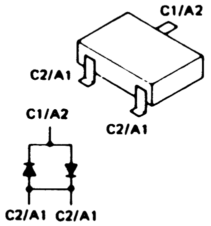
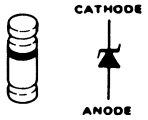
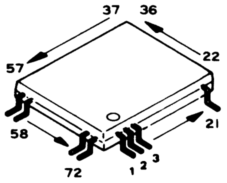
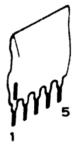
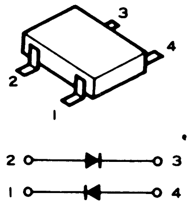
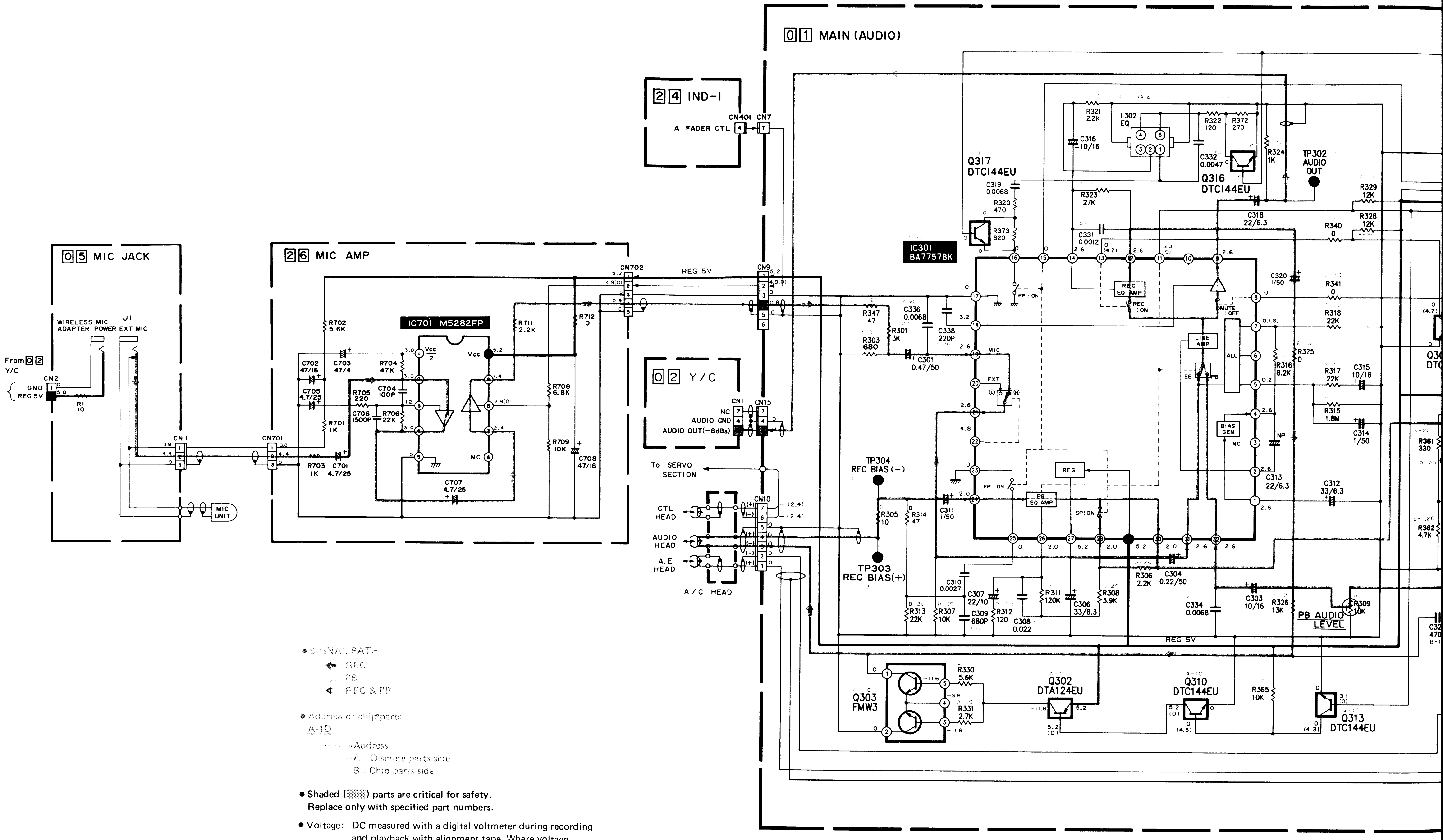
					 C A A CATHODE ANODE	 CATHODE C A ANODE
				 3 4 5 2 1 5 1 4 3 2	 A ANODE C C CATHODE	 3 4 5 2 1 5 1 4 3 2
		 31 30 45 16 46 15 60 1 2 3			 CATHODE A C ANODE	 4 5 6 3 2 1 6 1 5 2 4 3
	 25 24 36 13 12 37 48 1	 27 26 39 14 13 40 52 1 2 3			 CATHODE ANODE	 CATHODE ANODE
		 41 40 64 25 24 65 80 1 2 3	 3 4 5 2 1 5 1 4 3 2		 CATHODE ANODE	 CATHODE C ANODE A
	 1 OUT 3 GND IN 2		 3 4 5 2 1 5 1 4 3 2		 A2 C1 A1 C2 CATHODE 1 ANODE 2 ANODE 1 CATHODE 2	
					 C1/A2 C2/A1 C2/A1 C1/A2 C2/A1 C2/A1	 CATHODE ANODE
	 37 36 57 22 58 21 72 1 2 3					

5.6 AUDIO, MIC AMP & MIC JACK SCHEMATIC DIAGRAMS



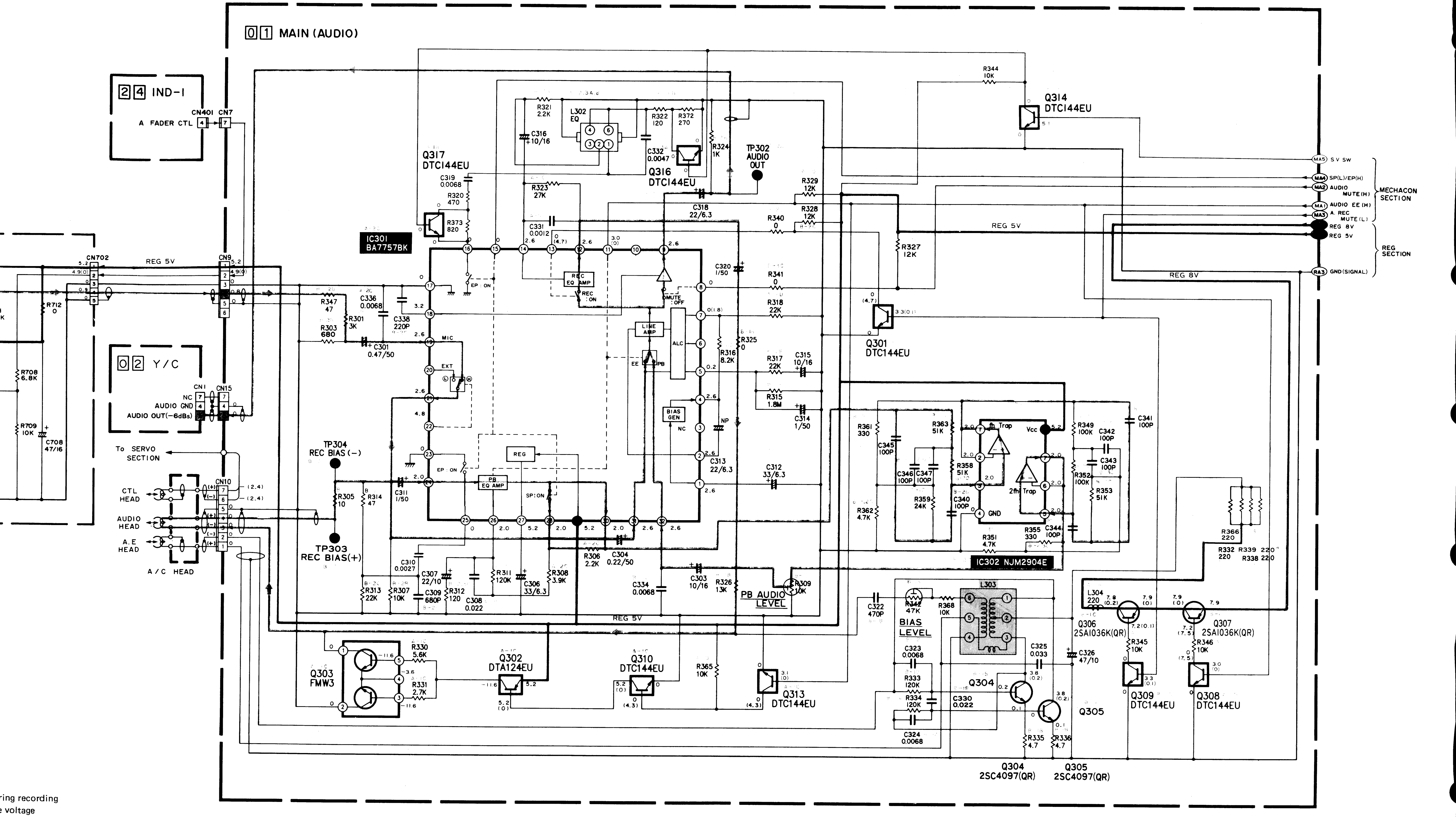
01 MAIN (AUDIO)
24 IND-1
CN401 CN7
A FADER CTL
05 MIC JACK
WIRELESS MIC ADAPTER POWER
J1 EXT MIC
From 02 Y/C
CN2
GND
REG 5V
R1 10
CN1
MIC UNIT
26 MIC AMP
CN701
CN702
IC701 M5282FP
R702 5.6K
C702 47/16
C703 47/4
R704 47K
C705 4.7/25
R705 220
C704 100P
C706 1500P
R706 22K
R701 1K
R703 1K
C701 4.7/25
C707 4.7/25
R711 2.2K
R712 0
R708 6.8K
R709 10K
C708 47/16
REG 5V
CN9
02 Y/C
CN1 CN15
NC
AUDIO GND
AUDIO OUT(−6dBs)
To SERVO SECTION
CN10
CTL HEAD
AUDIO HEAD
A.E HEAD
A/C HEAD
TP304 REC BIAS(−)
TP303 REC BIAS(+)
IC301 BA7757BK
Q317 DTC144EU
Q316 DTC144EU
L302 EQ
R321 2.2K
R322 120
R372 270
R324 1K
C316 10/16
C332 0.0047
C319 0.0068
R320 470
R373 820
R323 27K
C331 0.0012
C318 22/6.3
TP302 AUDIO OUT
R329 12K
R328 12K
R340 0
C320 1/50
R341 0
R318 22K
R325 0
R316 8.2K
R317 22K
C315 10/16
R315 1.8M
C314 1/50
R361 330
C313 22/6.3
C312 33/6.3
R362 4.7K
R347 47
C336 0.0068
R301 3K
R303 680
C338 220P
C301 0.47/50
MIC
EXT
REC EQ AMP
REC : ON
MUTE : OFF
LINE AMP
ALC
EE PB
BIAS GEN
REG
PB EQ AMP
EP : ON
SP : ON
R305 10
R314 47
C311 1/50
C310 0.0027
C307 22/10
R311 120K
C306 33/6.3
R308 3.9K
R306 2.2K
C304 0.22/50
C334 0.0068
C303 10/16
R326 13K
R309 10K
PB AUDIO LEVEL
R313 22K
R307 10K
C309 680P
R312 120
C308 0.022
REG 5V
Q303 FMW3
R330 5.6K
R331 2.7K
Q302 DTA124EU
Q310 DTC144EU
R365 10K
Q313 DTC144EU

- SIGNAL PATH
  - ◀ REC
  - ⇐ PB
  - ◀ REC & PB

- Address of chip parts
  - A-1D
  - 1D — Address
  - A — A : Discrete parts side
  - B : Chip parts side

- **Shaded (▨) parts are critical for safety. Replace only with specified part numbers.**

- Voltage: DC-measured with a digital voltmeter during recording and playback with alignment tape. Where voltage differs between recording and playback, the voltage during playback is shown in parenthesis.

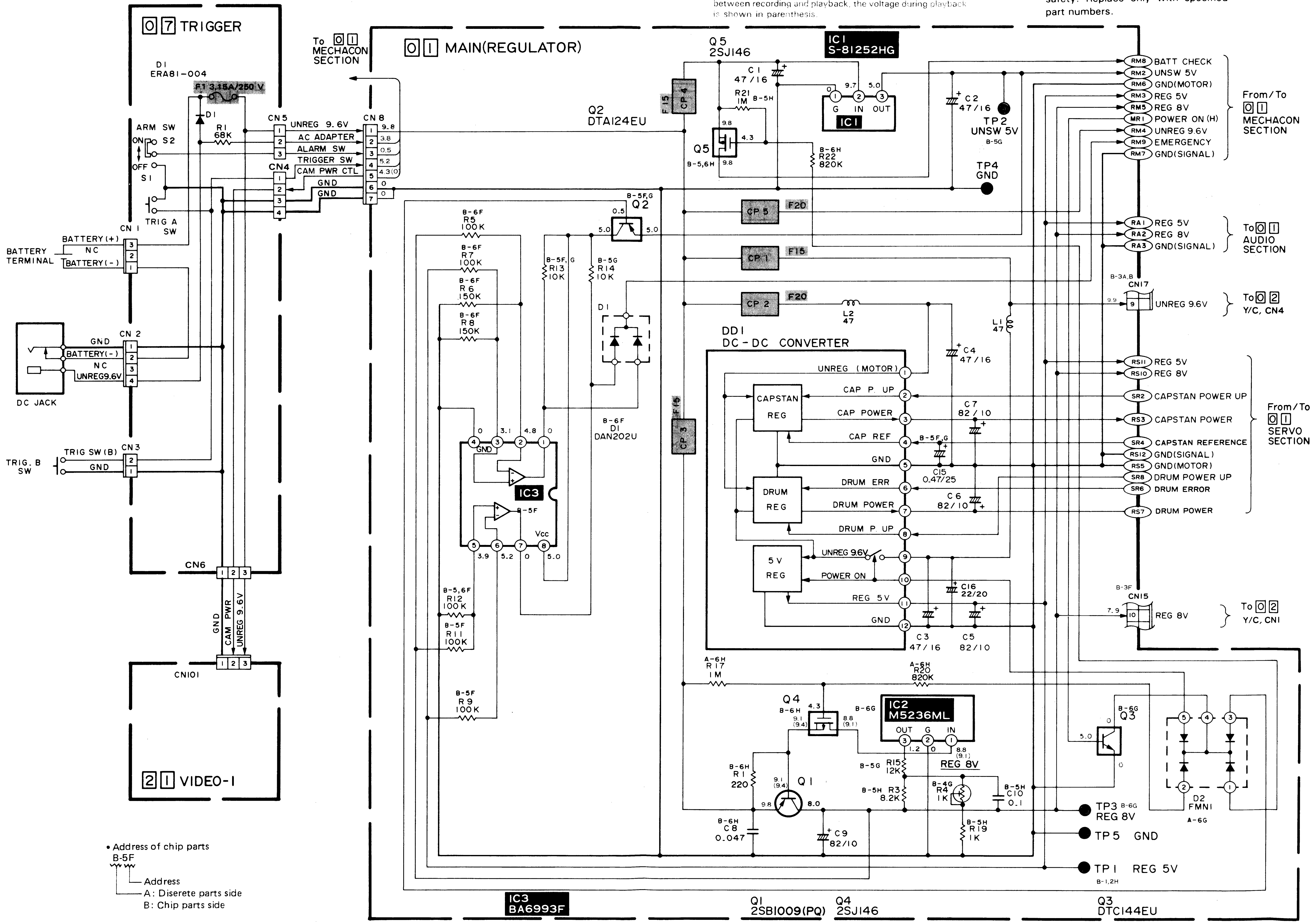

01 MAIN (AUDIO)
24 IND-1
A FADER CTL
CN401
CN7
02 Y/C
CN1
CN15
NC
AUDIO GND
AUDIO OUT(-6dBs)
CN702
REG 5V
CN9
CN10
To SERVO SECTION
CTL HEAD
AUDIO HEAD
A.E HEAD
A/C HEAD
R712 0
R708 6.8K
R709 10K
C708 47/16
IC301 BA7757BK
Q317 DTC144EU
C319 0.0068
R320 470
R373 820
R321 2.2K
L302 EQ
C316 10/16
R322 120
R372 270
C332 0.0047
Q316 DTC144EU
R324 1K
TP302 AUDIO OUT
R323 27K
C331 0.0012
C318 22/6.3
R329 12K
R328 12K
R340 0
R327 12K
C320 1/50
R341 0
R318 22K
R325 0
R316 8.2K
R317 22K
C315 10/16
R315 1.8M
C314 1/50
C313 22/6.3
C312 33/6.3
REC EQ AMP
REC ON
EP ON
MUTE OFF
LINE AMP
ALC
EE
PB
BIAS GEN
NC
NP
MIC
EXT
R347 47
R301 3K
C336 0.0068
C338 220P
R303 680
C301 0.47/50
TP304 REC BIAS(-)
TP303 REC BIAS(+)
R305 10
R314 47
C311 1/50
REG
PB EQ AMP
SP ON
C310 0.0027
C307 22/10
R313 22K
R307 10K
C309 680P
R312 120
C308 0.022
R311 120K
C306 33/6.3
R308 3.9K
R306 2.2K
C304 0.22/50
C334 0.0068
C303 10/16
R326 13K
PB AUDIO LEVEL
R309 10K
REG 5V
Q303 FMW3
R330 5.6K
R331 2.7K
Q302 DTA124EU
Q310 DTC144EU
R365 10K
Q313 DTC144EU
R344 10K
Q314 DTC144EU
Q301 DTC144EU
MA5 S V SW
MA4 SP(L)/EP(H)
MA2 AUDIO MUTE(H)
MA1 AUDIO EE(H)
MA3 A. REC MUTE(L)
REG 8V
REG 5V
MECHACON SECTION
REG SECTION
RA3 GND(SIGNAL)
REG 8V
R361 330
C345 100P
R363 51K
R358 51K
C346 100P
C347 100P
R359 24K
C340 100P
R362 4.7K
fh Trap
2fh Trap
Vcc
GND
R349 100K
C342 100P
C341 100P
C343 100P
R352 100K
R353 51K
R355 330
C344 100P
R351 4.7K
IC302 NJM2904E
R366 220
R332 220
R339 220
R338 220
C322 470P
R342 47K
R368 10K
L303
BIAS LEVEL
C323 0.0068
R333 120K
R334 120K
C330 0.022
C324 0.0068
C325 0.033
C326 47/10
Q304
Q305
R335 4.7
R336 4.7
Q304 2SC4097(QR)
Q305 2SC4097(QR)
L304 220
Q306 2SA1036K(QR)
Q307 2SA1036K(QR)
R345 10K
R346 10K
Q309 DTC144EU
Q308 DTC144EU

ring recording
e voltage
the voltage

5.7 REGULATOR & TRIGGER SCHEMATIC DIAGRAM

- Voltage : DC-measured with a digital voltmeter during recording and play back with alignment tape. Where voltage differ between recording and playback, the voltage during playback is shown in parenthesis.

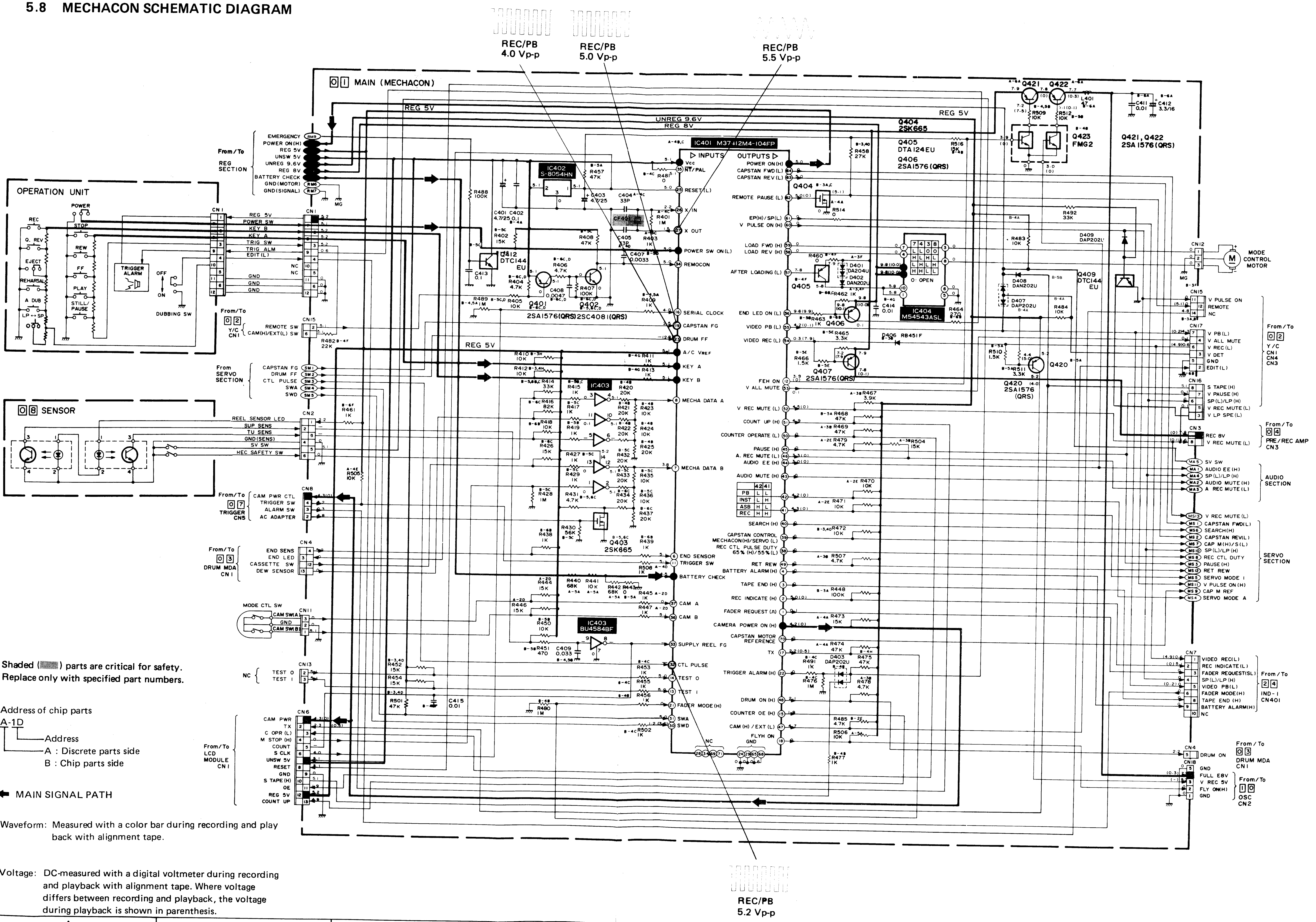
- Shaded (▨) parts are critical for safety. Replace only with specified part numbers.



07 TRIGGER
D1 ERA81-004
F1 3.15A/250 V
D1
R1 68K
ARM SW
ON S2
OFF
S1
TRIG A SW
BATTERY TERMINAL
BATTERY(+)
NC
BATTERY(-)
CN1
CN2
GND
BATTERY(-)
NC
UNREG9.6V
DC JACK
TRIG. B SW
TRIG SW(B)
GND
CN3
CN5
UNREG 9.6V
AC ADAPTER
ALARM SW
TRIGGER SW
CN4
CAM PWR CTL
GND
GND
CN6
GND
CAM PWR
UNREG 9.6V
CN101
21 VIDEO-1
To 01 MECHACON SECTION
CN8
01 MAIN(REGULATOR)
Q2 DTA124EU
Q5 2SJ146
IC1 S-81252HG
C1 47/16
R21 1M
G IN OUT
IC1
C2 47/16
TP2 UNSW 5V
TP4 GND
R22 820K
CP4
F15
CP5
F20
CP1
F15
CP2
F20
CP3
F15
L2 47
L1 47
Q2
R5 100K
R7 100K
R6 150K
R8 150K
R13 10K
R14 10K
D1
D1 DAN202U
IC3
Vcc
R12 100K
R11 100K
R9 100K
DD1 DC-DC CONVERTER
UNREG (MOTOR)
CAP P. UP
CAP POWER
CAP REF
GND
DRUM ERR
DRUM POWER
DRUM P UP
UNREG 9.6V
POWER ON
REG 5V
GND
CAPSTAN REG
DRUM REG
5V REG
C4 47/16
C7 82/10
C15 0.47/25
C6 82/10
C16 22/20
C3 47/16
C5 82/10
RM8 BATT CHECK
RM2 UNSW 5V
RM6 GND(MOTOR)
RM3 REG 5V
RM5 REG 8V
MR1 POWER ON (H)
RM4 UNREG 9.6V
RM9 EMERGENCY
RM7 GND(SIGNAL)
From/To 01 MECHACON SECTION
RA1 REG 5V
RA2 REG 8V
RA3 GND(SIGNAL)
To 01 AUDIO SECTION
CN17
UNREG 9.6V
To 02 Y/C, CN4
RS11 REG 5V
RS10 REG 8V
SR2 CAPSTAN POWER UP
RS3 CAPSTAN POWER
SR4 CAPSTAN REFERENCE
RS12 GND(SIGNAL)
RS5 GND(MOTOR)
SR8 DRUM POWER UP
SR6 DRUM ERROR
RS7 DRUM POWER
From/To 01 SERVO SECTION
CN15
REG 8V
To 02 Y/C, CN1
R17 1M
R20 820K
Q4
IC2 M5236ML
OUT G IN
REG 8V
R1 220
Q1
R15 12K
R3 8.2K
R4 1K
C10 0.1
R19 1K
C8 0.047
C9 82/10
Q3
D2 FMN1
TP3 REG 8V
TP5 GND
TP1 REG 5V
IC3 BA6993F
Q1 2SB1009(PQ)
Q4 2SJ146
Q3 DTC144EU
A
B
C
E
F
G
H
1
2
3
4
5
6

- Address of chip parts
B-5F
└ Address
A: Diserete parts side
B: Chip parts side

5.8 MECHACON SCHEMATIC DIAGRAM


REC/PB 4.0 Vp-p
REC/PB 5.0 Vp-p
REC/PB 5.5 Vp-p
REC/PB 5.2 Vp-p
01 MAIN (MECHACON)
OPERATION UNIT
08 SENSOR
REG 5V
UNREG 9.6V
REG 8V
IC401 M37412M4-104FP
IC402 S-8054HN
IC403
IC403 BU4584BF
IC404 M54543ASL
Q401 2SA1576(QRS)
Q402 2SC4081(QRS)
Q403 2SK665
Q404 2SK665
Q405 DTA124EU
Q406 2SA1576(QRS)
Q407 2SA1576(QRS)
Q412 DTC144EU
Q409 DTC144EU
Q420 2SA1576 (QRS)
Q421, Q422 2SA1576(QRS)
Q423 FMG2
D409 DAP202U
D408 DAN202U
D407 DAP202U
D403 DAP202U
D401 DA204U
D402 DAN202U
D406 RB451F
CF401
From/To REG SECTION
EMERGENCY
POWER ON(H)
REG 5V
UNSW 5V
UNREG 9.6V
REG 8V
BATTERY CHECK
GND(MOTOR)
GND(SIGNAL)
REC
Q. REV
EJECT
REHARSAL
A DUB
LP ↔ SP
POWER
STOP
REW
FF
PLAY
STILL/PAUSE
TRIGGER ALARM
OFF
ON
DUBBING SW
From/To 02 Y/C CN1
REMOTE SW
CAM(H)/EXT(L) SW
From SERVO SECTION
CAPSTAN FG
DRUM FF
CTL PULSE
SWA
SWB
REEL SENSOR LED
SUP SENS
TU SENS
GND(SENS)
SV SW
REC SAFETY SW
From/To 07 TRIGGER CN5
CAM PWR CTL
TRIGGER SW
ALARM SW
AC ADAPTER
From/To 03 DRUM MDA CN1
END SENS
END LED
CASSETTE SW
DEW SENSOR
MODE CTL SW
CAM SW(A)
GND
CAM SW(B)
TEST 0
TEST 1
From/To LCD MODULE CN1
CAM PWR
TX
C OPR (L)
M STOP (H)
COUNT
S CLK
UNSW 5V
RESET
GND
S TAPE (H)
OE
REG 5V
COUNT UP
INPUTS
OUTPUTS
Vcc
NT/PAL
RESET (L)
X IN
X OUT
POWER SW ON (L)
REMOCON
SERIAL CLOCK
CAPSTAN FG
DRUM FF
A/C VREF
KEY A
KEY B
MECHA DATA A
MECHA DATA B
END SENSOR
TRIGGER SW
BATTERY CHECK
CAM A
CAM B
SUPPLY REEL FG
CTL PULSE
TEST 0
TEST 1
FADER MODE (H)
SWA
SWB
POWER ON (H)
CAPSTAN FWD (L)
CAPSTAN REV (L)
REMOTE PAUSE (L)
EP(H)/SP(L)
V PULSE ON (H)
LOAD FWD (H)
LOAD REV (H)
AFTER LOADING (L)
END LED ON (L)
VIDEO PB (L)
VIDEO REC (L)
FEH ON
V ALL MUTE
V REC MUTE (L)
COUNT UP (H)
COUNTER OPERATE (L)
PAUSE (H)
A. REC MUTE (L)
AUDIO EE (H)
AUDIO MUTE (H)
SEARCH (H)
CAPSTAN CONTROL MECHACON(H)/SERVO (L)
REC CTL PULSE DUTY 65% (H)/55%(L)
RET REW
BATTERY ALARM (H)
TAPE END (H)
REC INDICATE (H)
FADER REQUEST
CAMERA POWER ON (H)
CAPSTAN MOTOR REFERENCE
TX
TRIGGER ALARM (H)
DRUM ON (H)
COUNTER OE (H)
CAM (H) / EXT (L)
FLYH ON
GND
NC
0 : OPEN
MODE CONTROL MOTOR
MG
V PULSE ON
REMOTE
V PB (L)
V ALL MUTE
V REC (L)
V DET
EDIT (L)
From/To 02 Y/C CN1 CN4 CN3
S TAPE (H)
V PAUSE (H)
SP (L)/LP (H)
V REC MUTE (L)
V LP SPE (L)
REC 8V
V REC MUTE (L)
From/To 04 PRE/REC AMP CN3
SV SW
AUDIO EE (H)
SP (L)/LP (H)
AUDIO MUTE (H)
A REC MUTE (L)
AUDIO SECTION
V REC MUTE (L)
CAPSTAN FWD (L)
SEARCH (H)
CAPSTAN REV (L)
CAP M (H)/S (L)
SP (L)/LP (H)
REC CTL DUTY
PAUSE (H)
RET REW
SERVO MODE 1
V PULSE ON (H)
CAP M REF
SERVO MODE A
SERVO SECTION
VIDEO REC (L)
REC INDICATE (L)
FADER REQUEST (L)
SP (L)/LP (H)
VIDEO PB (L)
FADER MODE (H)
TAPE END (H)
BATTERY ALARM (H)
From/To 24 IND-1 CN401
DRUM ON
From/To 03 DRUM MDA CN1
FULL E8V
V REC 5V
FLY ON (H)
From/To 10 OSC CN2

- Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

- Address of chip parts

  A-1D
  - Address
  - A : Discrete parts side
  - B : Chip parts side

⬅ MAIN SIGNAL PATH

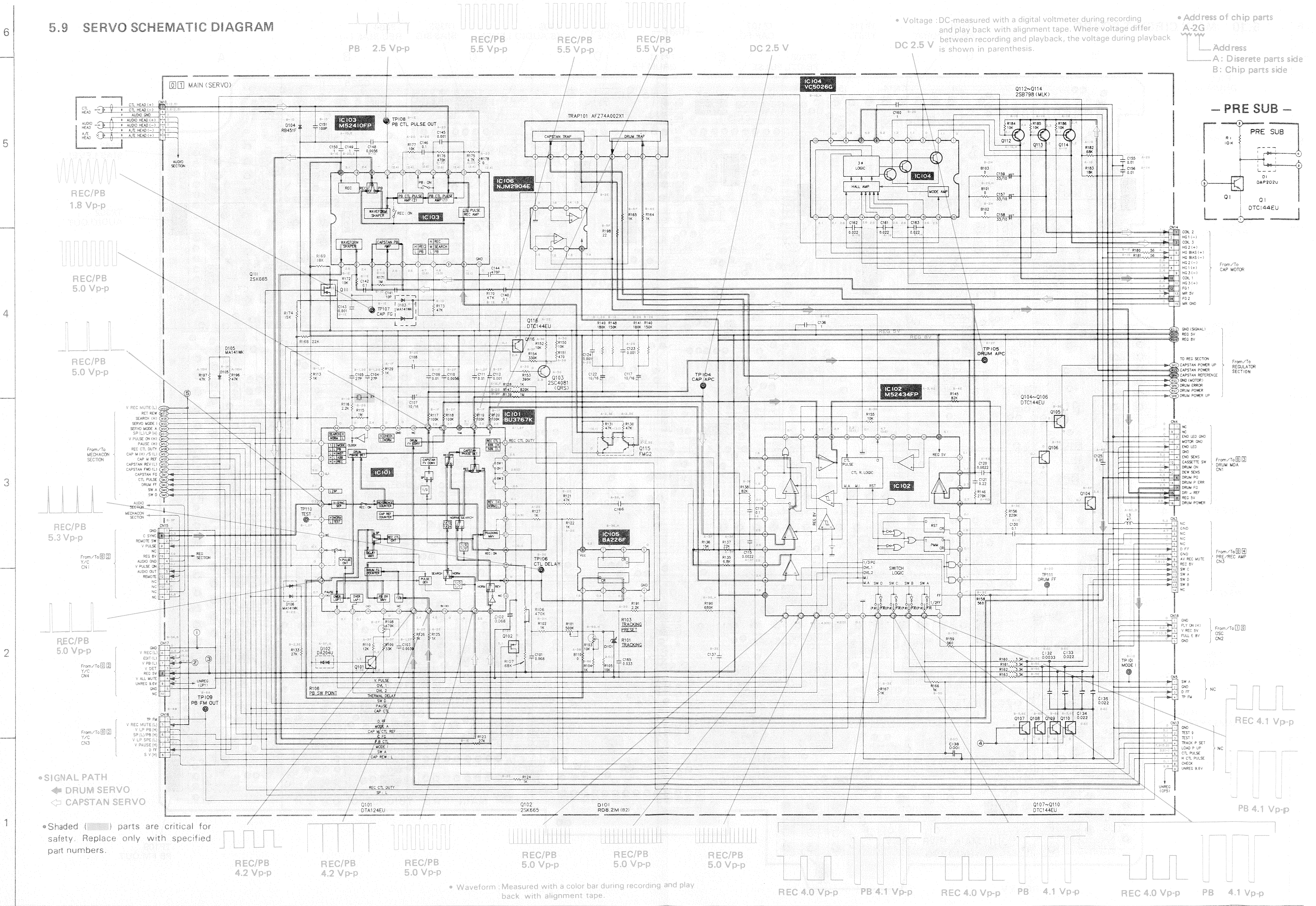
- Waveform: Measured with a color bar during recording and play back with alignment tape.

- Voltage: DC-measured with a digital voltmeter during recording and playback with alignment tape. Where voltage differs between recording and playback, the voltage during playback is shown in parenthesis.

5.9 SERVO SCHEMATIC DIAGRAM

- Voltage : DC-measured with a digital voltmeter during recording and play back with alignment tape. Where voltage differ between recording and playback, the voltage during playback is shown in parenthesis.

- Address of chip parts
  A-2G
  Address
  A : Diserete parts side
  B : Chip parts side

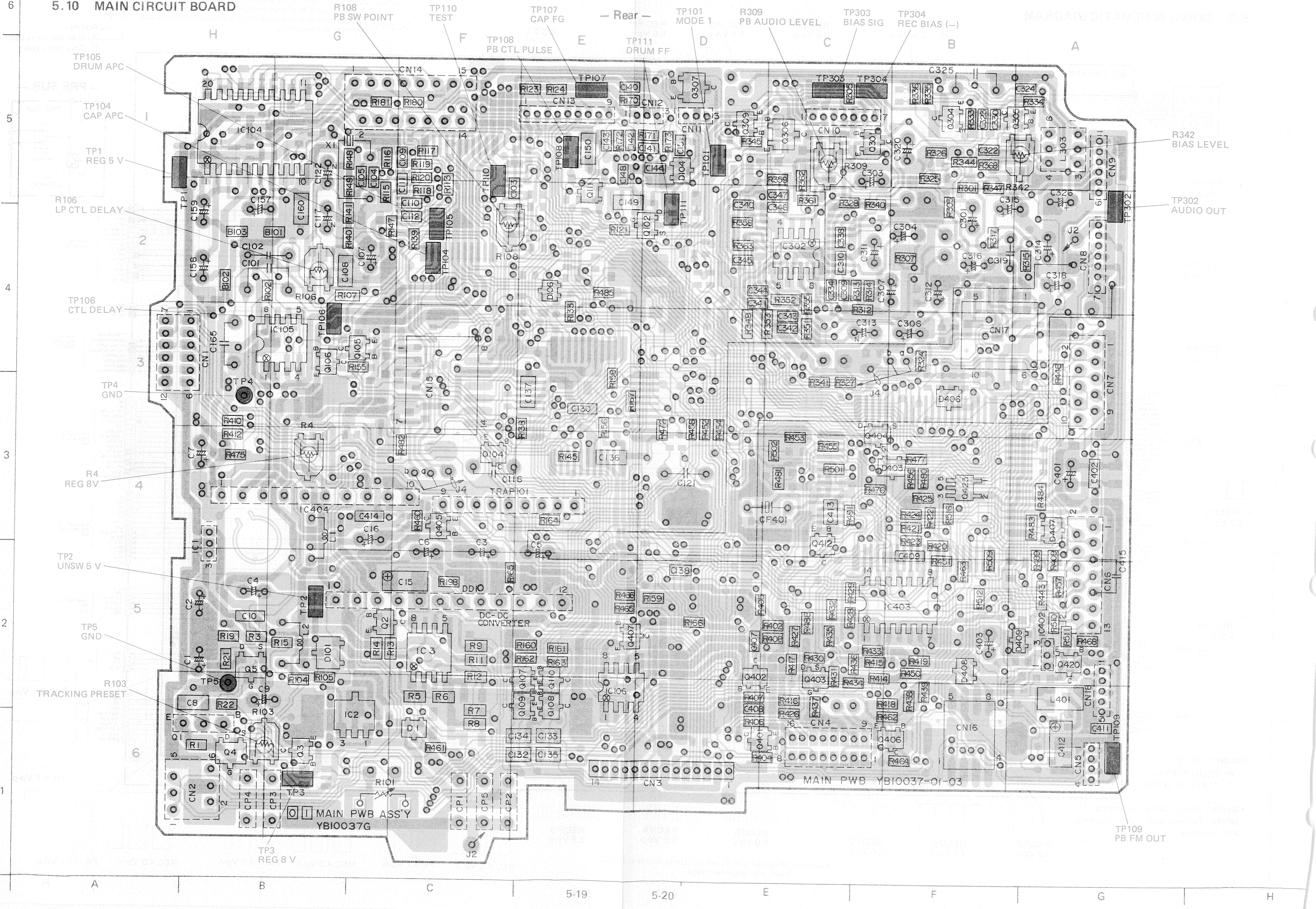

6
5
4
3
2
1
A
B
C
E
F
G
H
PB 2.5 Vp-p
REC/PB 5.5 Vp-p
REC/PB 5.5 Vp-p
REC/PB 5.5 Vp-p
DC 2.5 V
DC 2.5 V
REC/PB 1.8 Vp-p
REC/PB 5.0 Vp-p
REC/PB 5.0 Vp-p
REC/PB 5.3 Vp-p
REC/PB 5.0 Vp-p
REC/PB 4.2 Vp-p
REC/PB 4.2 Vp-p
REC/PB 5.0 Vp-p
REC/PB 5.0 Vp-p
REC/PB 5.0 Vp-p
REC/PB 5.0 Vp-p
REC 4.0 Vp-p
PB 4.1 Vp-p
REC 4.0 Vp-p
PB 4.1 Vp-p
REC 4.0 Vp-p
PB 4.1 Vp-p
REC 4.1 Vp-p
PB 4.1 Vp-p
01 MAIN (SERVO)
CTL HEAD
AUDIO HEAD
A/E HEAD
AUDIO SECTION
IC103 M52410FP
TP108 PB CTL PULSE OUT
TRAP101 AFZ74A002X1
CAPSTAN TRAP
DRUM TRAP
IC106 NJM2904E
IC104 VC5026G
Q112~Q114 2SB798 (MLK)
– PRE SUB –
PRE SUB
R1 10K
D1 DAP202U
Q1 DTC144EU
From/To CAP MOTOR
Q111 2SK665
TP107 CAP FG
D105 MA141WK
Q116 DTC144EU
Q103 2SC4081 (QRS)
TP105 DRUM APC
TP104 CAP APC
IC102 M52434FP
Q104~Q106 DTC144EU
IC101 BU3767K
Q115 FMG2
From/To REGULATOR SECTION
From/To MECHACON SECTION
From/To 03 DRUM MDA CN1
TP110 TEST
IC105 BA226F
TP106 CTL DELAY
From/To 02 Y/C CN1
REG SECTION
From/To 04 PRE/REC AMP CN3
TP111 DRUM FF
D106 MA141WK
D102 DA204U
R108 PB SW POINT
R103 TRACKING PRESET
R101 TRACKING
From/To 02 Y/C CN4
TP109 PB FM OUT
From/To 01 OSC CN2
TP101 MODE I
From/To 02 Y/C CN3
Q101 DTA124EU
Q102 2SK665
D101 RD8.2M (B2)
Q107~Q110 DTC144EU

- SIGNAL PATH
  ⬅ DRUM SERVO
  ⇦ CAPSTAN SERVO

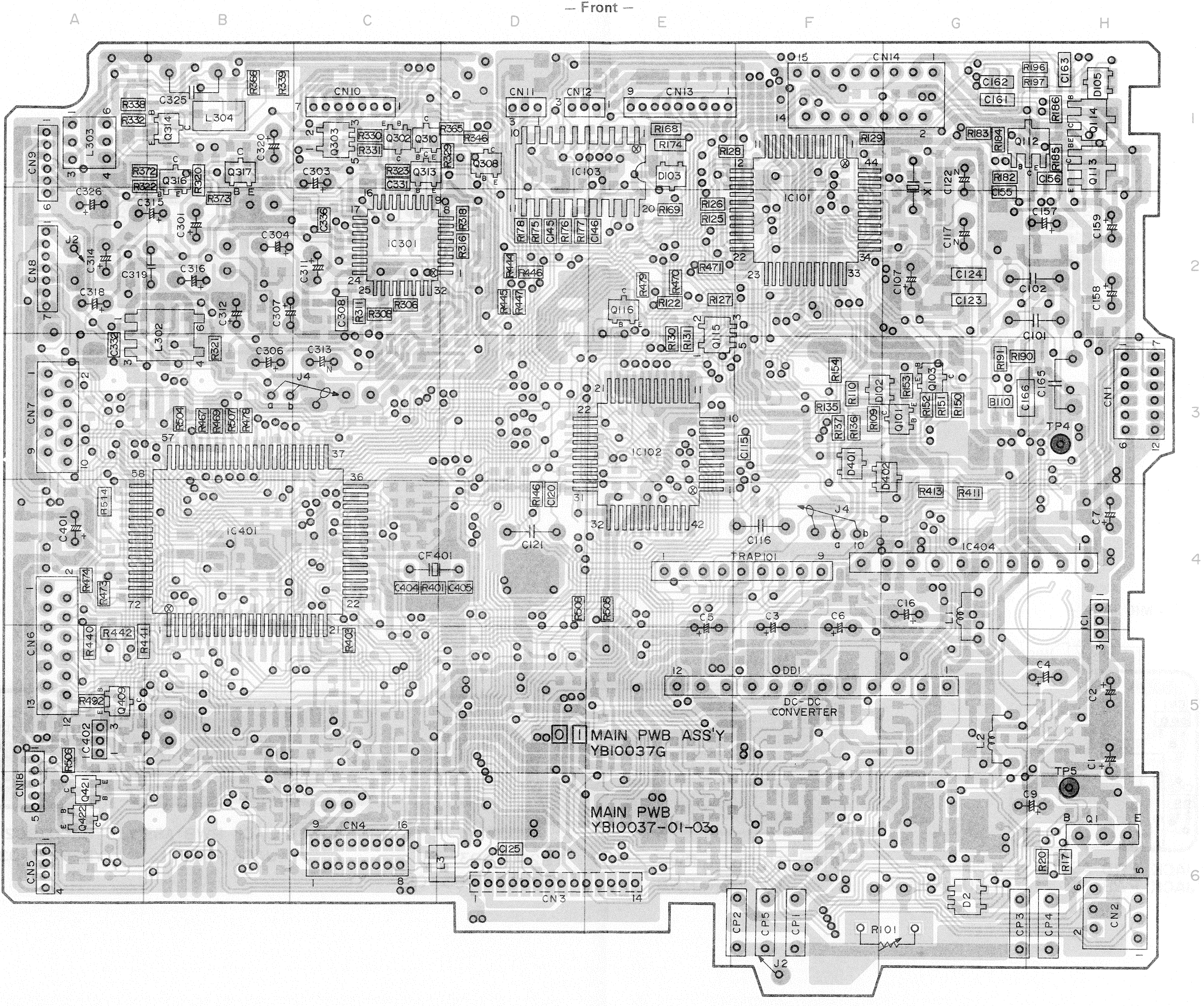
- Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

- Waveform : Measured with a color bar during recording and play back with alignment tape.

5.10 MAIN CIRCUIT BOARD



— Rear —
R108
PB SW POINT
TP110
TEST
TP107
CAP FG
TP108
PB CTL PULSE
TP111
DRUM FF
TP101
MODE 1
R309
PB AUDIO LEVEL
TP303
BIAS SIG
TP304
REC BIAS (—)
TP105
DRUM APC
TP104
CAP APC
TP1
REG 5 V
R106
LP CTL DELAY
R342
BIAS LEVEL
TP302
AUDIO OUT
TP106
CTL DELAY
TP4
GND
R4
REG 8V
TP2
UNSW 5 V
TP5
GND
R103
TRACKING PRESET
TP3
REG 8 V
TP109
PB FM OUT
DC-DC
CONVERTER
TRAP101
MAIN PWB ASS'Y
YB10037G
MAIN PWB YB10037-01-03
A
B
C
D
E
F
G
H
I
1
2
3
4
5
6

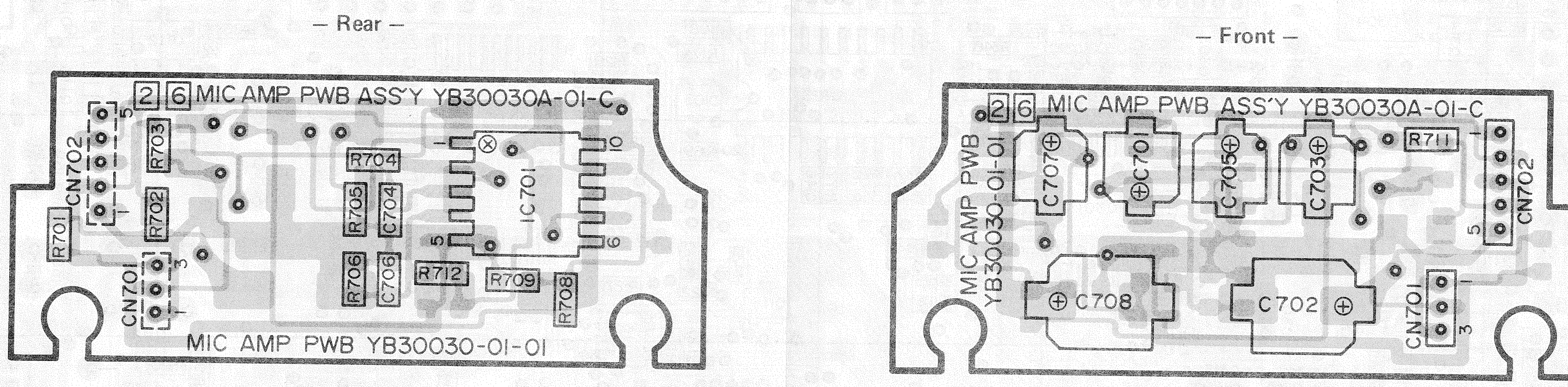

— Front —
A
B
C
D
E
F
G
H
1
2
3
4
5
6
MAIN PWB ASS'Y
YB10037G
MAIN PWB
YB10037-01-03
DC-DC
CONVERTER
IC401
IC301
IC101
IC102
IC103
IC404
TRAP101
DD1
CN1
CN2
CN3
CN4
CN5
CN6
CN7
CN8
CN9
CN10
CN11
CN12
CN13
CN14
CN18
CF401
TP4
TP5
R101

6

5.11 MIC AMP, MIC JACK, TRIGGER & JACK CIRCUIT BOARDS

5

– MIC AMP –

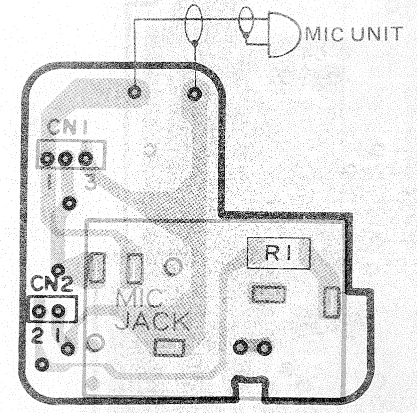


– Rear –
26 MIC AMP PWB ASS'Y YB30030A-01-C
CN702
R703
R704
IC701
R705
C704
R702
R701
CN701
R706
C706
R712
R709
R708
MIC AMP PWB YB30030-01-01
– Front –
26 MIC AMP PWB ASS'Y YB30030A-01-C
MIC AMP PWB YB30030-01-01
C707
C701
C705
C703
R711
CN702
C708
C702
CN701

4

3

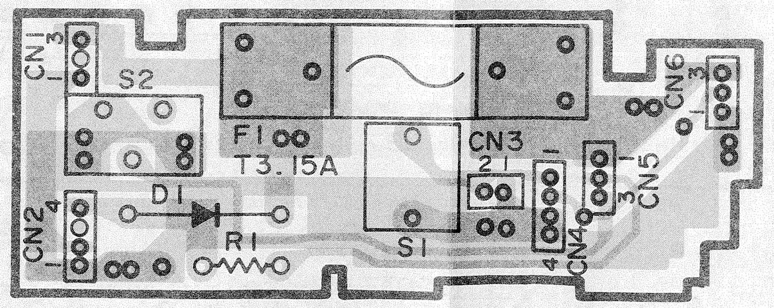
– MIC JACK –



MIC UNIT
CN1
CN2
R1
MIC JACK

05 MIC JACK PWB ASS'Y YB20079A1
MIC JACK PWB YB20079-03-01

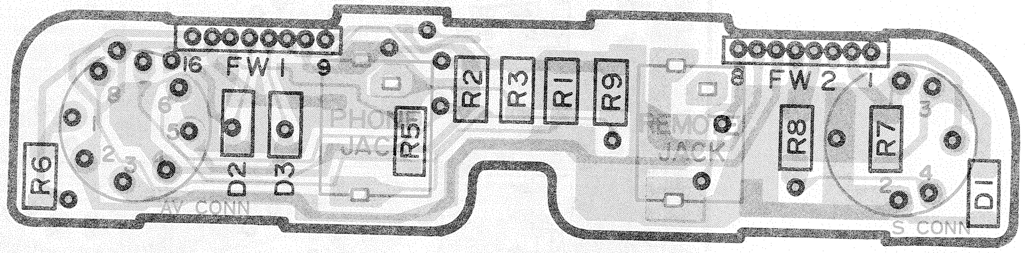
– TRIGGER –



CN1
S2
F1
T3.15A
CN3
CN6
CN5
CN4
CN2
D1
R1
S1

07 TRIGGER PWB ASS'Y YB20079B3-01
TRIGGER PWB YB20079-03-01

– JACK –



FW1
FW2
R2
R3
R1
R9
R5
R6
R8
R7
D1
D2
D3
PHONE JACK
REMOTE JACK
AV CONN
S CONN

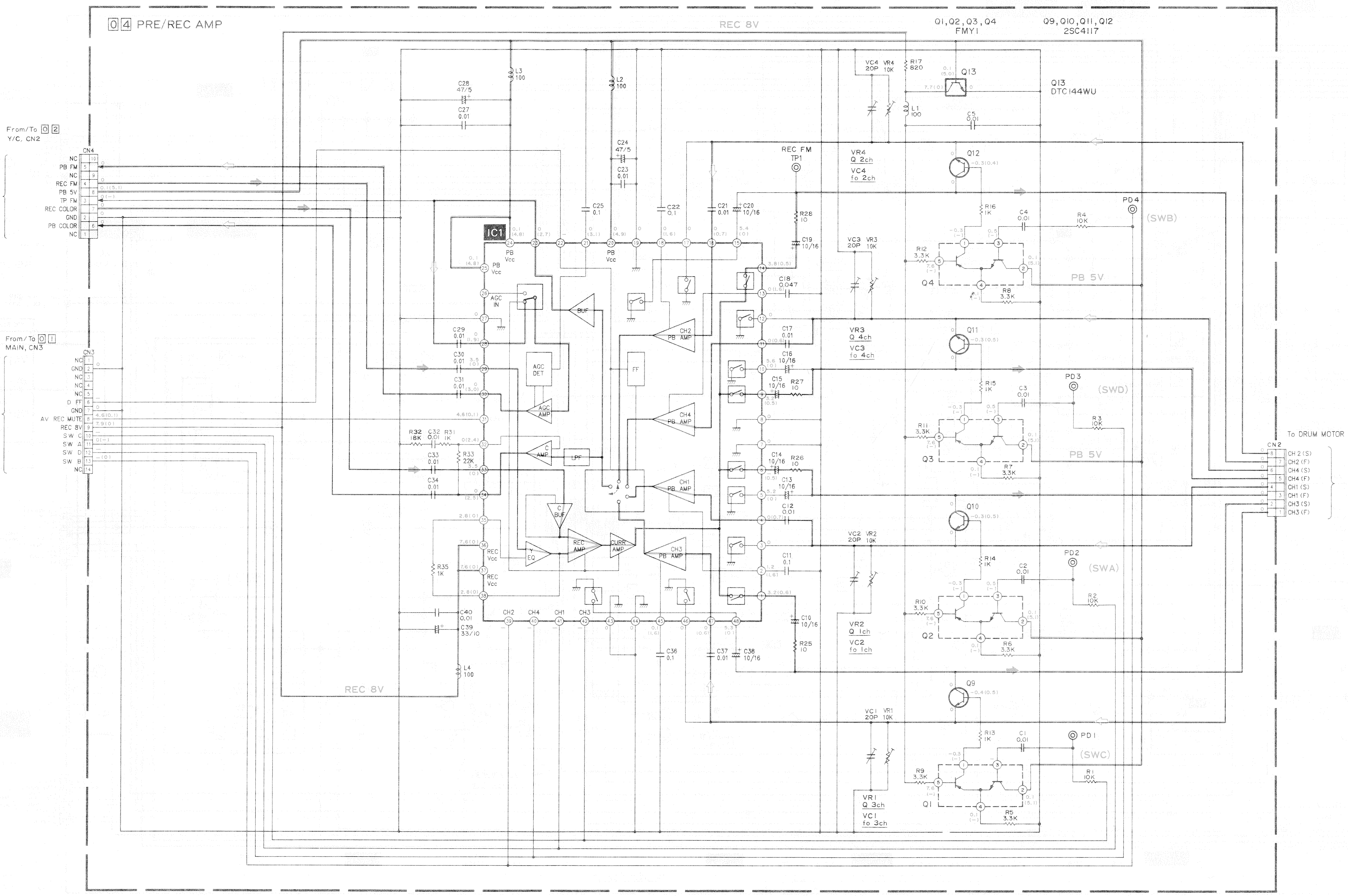
06 JACK PWB ASS'Y YB20079C2
JACK PWB YB20079-03-01

2

1

A B C D E F G H

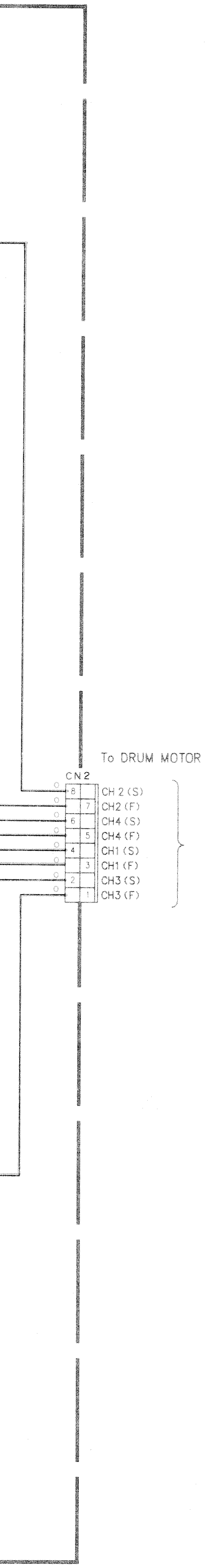
5.12 PRE/REC AMP SCHEMATIC DIAGRAM


04 PRE/REC AMP
REC 8V
From/To 02
Y/C, CN2
CN4
NC 10
PB FM 5
NC 9
REC FM 4
PB 5V 8
TP FM 3
REC COLOR 7
GND 2
PB COLOR 6
NC 1
From/To 01
MAIN, CN3
CN3
NC 1
GND 2
NC 3
NC 4
NC 5
D FF 6
GND 7
AV REC MUTE 8
REC 8V 9
SW C 10
SW A 11
SW D 12
SW B 13
NC 14
IC1
PB Vcc
AGC IN
AGC DET
AGC AMP
C AMP
LPF
BUF
C BUF
Y EQ
REC AMP
CURR AMP
CH1 PB AMP
CH2 PB AMP
CH3 PB AMP
CH4 PB AMP
FF
REC Vcc
CH2
CH4
CH1
CH3
L3 100
L2 100
L1 100
L4 100
C28 47/5
C27 0.01
C24 47/5
C23 0.01
C25 0.1
C22 0.1
C21 0.01
C20 10/16
REC FM TP1
R28 10
C19 10/16
C18 0.047
C17 0.01
C16 10/16
C15 10/16
R27 10
C14 10/16
R26 10
C13 10/16
C12 0.01
C11 0.1
C10 10/16
R25 10
C36 0.1
C37 0.01
C38 10/16
C29 0.01
C30 0.01
C31 0.01
R32 18K
C32 0.01
R31 1K
C33 0.01
R33 22K
C34 0.01
R35 1K
C40 0.01
C39 33/10
REC 8V
Q1, Q2, Q3, Q4
FMY1
Q9, Q10, Q11, Q12
2SC4117
Q13
DTC144WU
VC4 20P
VR4 10K
R17 820
C5 0.01
VR4 Q 2ch
VC4 fo 2ch
VC3 20P
VR3 10K
VR3 Q 4ch
VC3 fo 4ch
VC2 20P
VR2 10K
VR2 Q 1ch
VC2 fo 1ch
VC1 20P
VR1 10K
VR1 Q 3ch
VC1 fo 3ch
Q12
Q11
Q10
Q9
R16 1K
R15 1K
R14 1K
R13 1K
C4 0.01
C3 0.01
C2 0.01
C1 0.01
R4 10K
R3 10K
R2 10K
R1 10K
R12 3.3K
R11 3.3K
R10 3.3K
R9 3.3K
R8 3.3K
R7 3.3K
R6 3.3K
R5 3.3K
Q4
Q3
Q2
Q1
PD4 (SWB)
PD3 (SWD)
PD2 (SWA)
PD1 (SWC)
PB 5V
PB 5V
To DRUM MOTOR
CN2
8 CH 2 (S)
7 CH2 (F)
6 CH4 (S)
5 CH4 (F)
4 CH1 (S)
3 CH1 (F)
2 CH3 (S)
1 CH3 (F)

SIGNAL PATH
- ⇐ REC
- ⇐ PB
- ⇐ REC & PB

Note: This schematic diagram is only for reference.
Avoid replacing incidicual parts.
Replace the entire unit only.

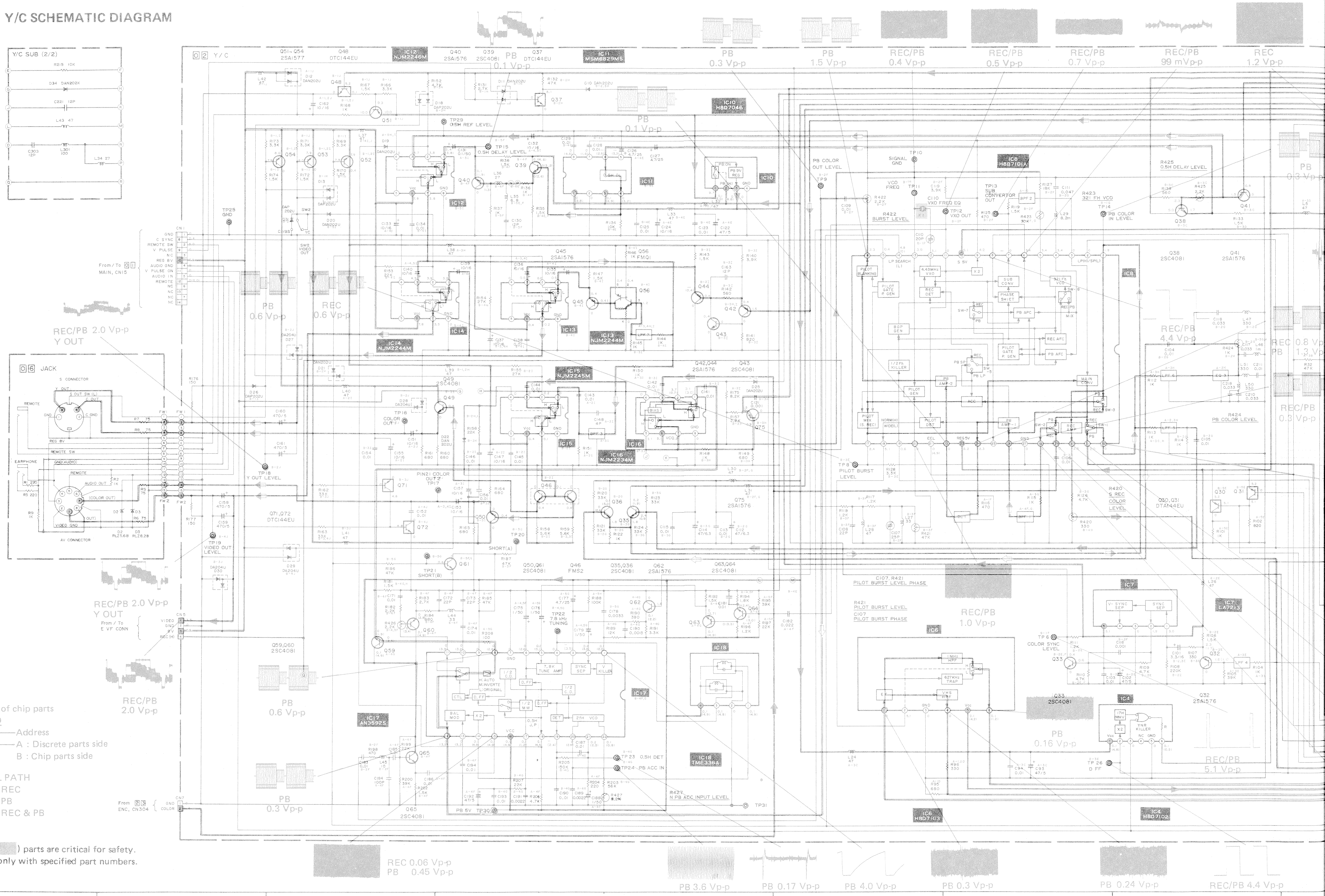
- Voltage : DC-measured with a digital voltmeter during recording and play back, with alignment tape. Where voltage differ between recording and playback, the voltage during playback is shown in parenthesis.


To DRUM MOTOR
CN2
8
7
6
5
4
3
2
1
CH 2 (S)
CH2 (F)
CH4 (S)
CH4 (F)
CH1 (S)
CH1 (F)
CH3 (S)
CH3 (F)

ording
age differ
uring playback

H

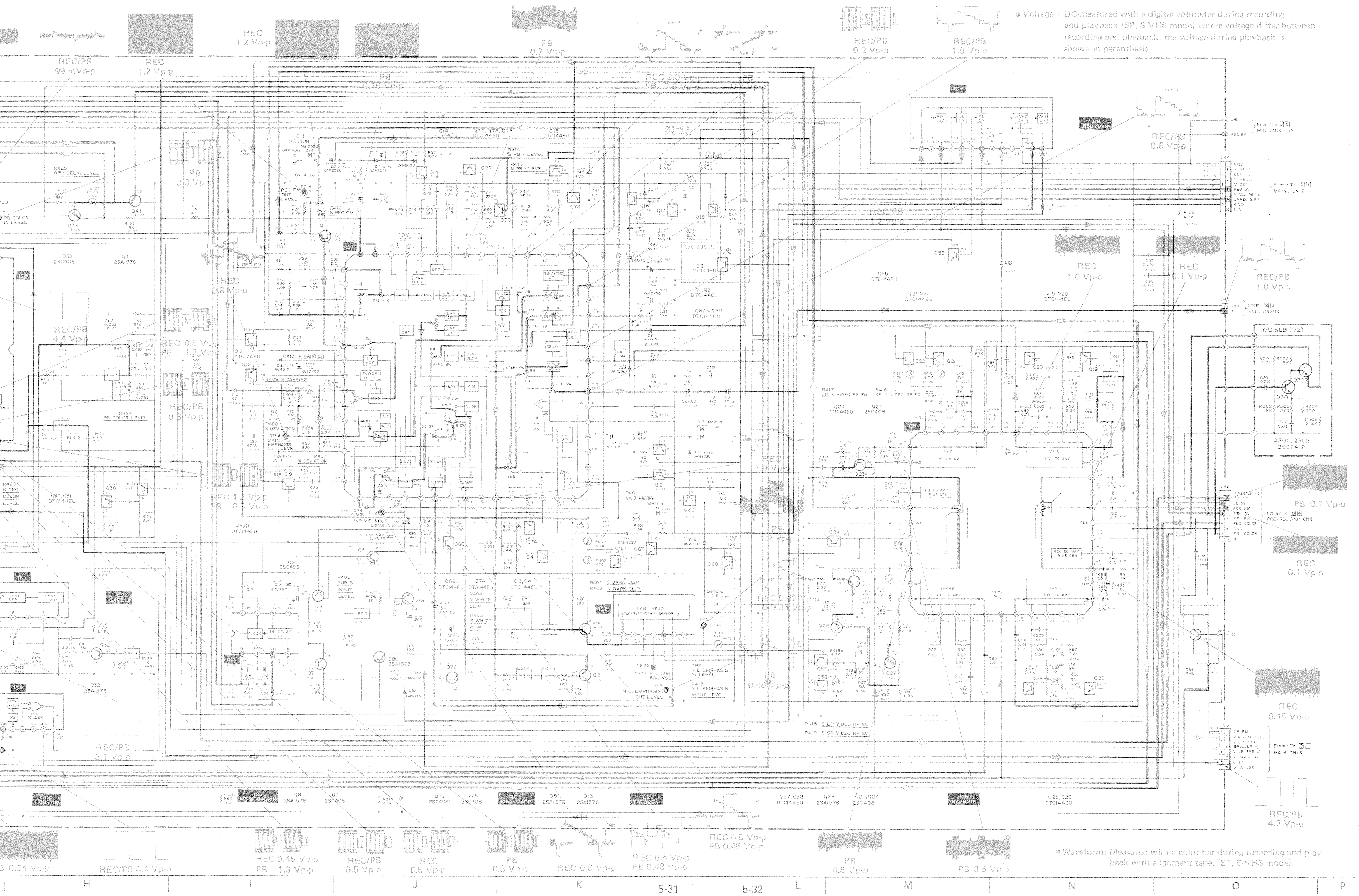
5.13 Y/C SCHEMATIC DIAGRAM


Y/C SUB (2/2)
Y/C
JACK
S CONNECTOR
AV CONNECTOR
From / To MAIN, CN15
From / To E VF CONN
From ENC, CN304
IC12 NJM2246M
IC11 MSM6829MS
IC10 H807046
IC8 H8710IA
IC14 NJM2244M
IC13 NJM2244M
IC15 NJM2245M
IC16 NJM2234M
IC17 AN3592S
IC18 TME336A
IC6 H8D7103
IC7 LA7213
IC4 H8D7102
PB 0.1 Vp-p
PB 0.3 Vp-p
PB 1.5 Vp-p
REC/PB 0.4 Vp-p
REC/PB 0.5 Vp-p
REC/PB 0.7 Vp-p
REC/PB 99 mVp-p
REC 1.2 Vp-p
PB 0.6 Vp-p
REC 0.6 Vp-p
REC/PB 2.0 Vp-p Y OUT
REC/PB 4.4 Vp-p
REC/PB 1.0 Vp-p
PB 0.16 Vp-p
REC/PB 5.1 Vp-p
REC/PB 2.0 Vp-p
REC 0.06 Vp-p PB 0.45 Vp-p
PB 3.6 Vp-p
PB 0.17 Vp-p
PB 4.0 Vp-p
PB 0.3 Vp-p
PB 0.24 Vp-p
REC/PB 4.4 Vp-p
TP29 0.5H REF LEVEL
TP15 0.5H DELAY LEVEL
TP18 Y OUT LEVEL
TP19 VIDEO OUT LEVEL
TP16 COLOR OUT
TP17 PIN21 COLOR OUT
TP8 PILOT BURST LEVEL
TP12 VXO OUT
TP13 SUB CONVERTOR OUT
TP14 PB COLOR IN LEVEL
TP9 PB COLOR OUT LEVEL
TP10 SIGNAL GND
TP11 VCO FREQ
TP20 SHORT(A)
TP21 SHORT(B)
TP22 7.8 kHz TUNING
TP23 0.5H DET
TP24 PB ACC IN
TP25 GND
TP26 D FF
TP30
TP31
TP6 COLOR SYNC LEVEL
R427 N PB ACC INPUT LEVEL
C107, R421 PILOT BURST LEVEL PHASE
R425 0.5H DELAY LEVEL
R423 321 FH VCO
R422 BURST LEVEL
R424 PB COLOR LEVEL
R420 S REC COLOR LEVEL
C110 VXO FREQ EQ

- Address of chip parts
  A-1D
  Address
  A : Discrete parts side
  B : Chip parts side

- SIGNAL PATH
  REC
  PB
  REC & PB

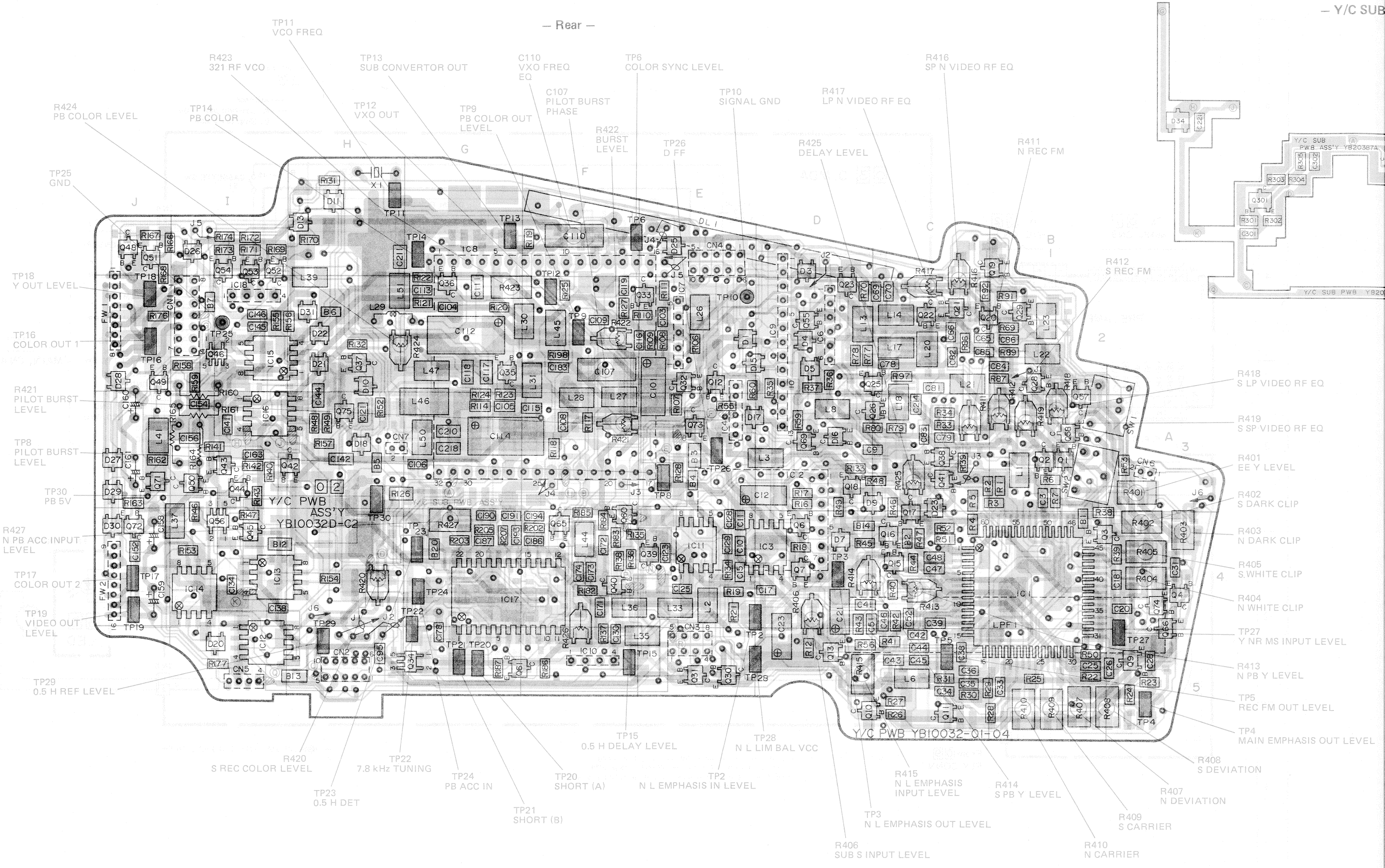
- Shaded (▨) parts are critical for safety.
  Replace only with specified part numbers.

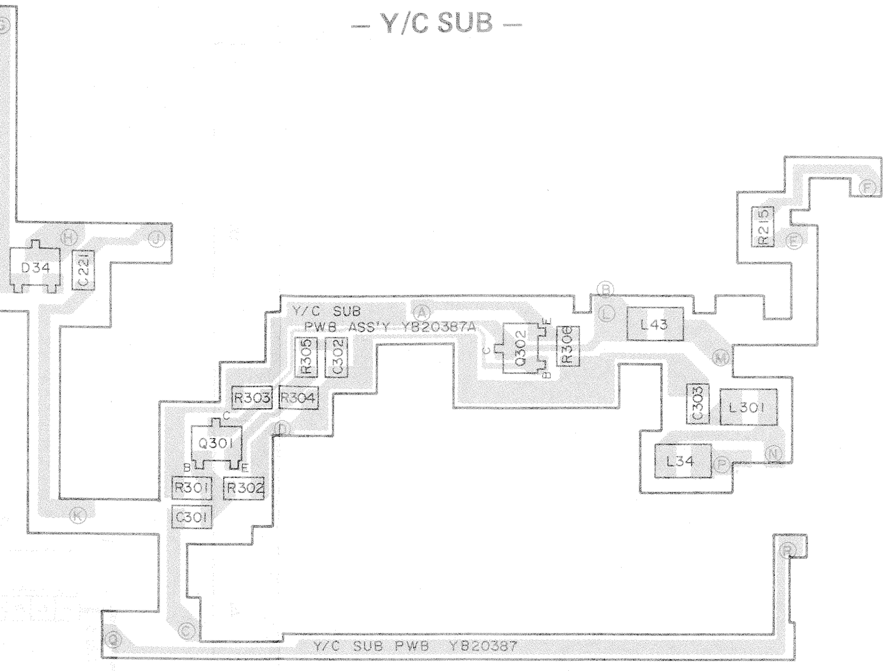

IC1 M52074FP
IC2 THE326A
IC3 MSM6847MS
IC4 H807102
IC5 BA7601K
IC7 EA7213
IC9 H807098
Y/C SUB (1/2)
Q301, Q302 2SC2412
Q55 DTC144EU
Q21, Q22 DTC144EU
Q19, Q20 DTC144EU
Q24 DTC144EU
Q23 2SC4081
Q38 2SC4081
Q41 2SA1576
Q11 2SC4081
Q14 DTC144EU
Q77, Q78, Q79 DTC144EU
Q15 DTC144EU
Q16 ~ Q18 DTC124XU
Q1, Q2 DTC144EU
Q67 ~ Q69 DTC144EU
Q12 DTC144EU
Q30, Q31 DTA144EU
Q9, Q10 DTC144EU
Q8 2SC4081
Q66 DTC144EU
Q74 DTA144EU
Q3, Q4 DTC144EU
Q80 2SA1576
Q32 2SA1576
Q6 2SA1576
Q7 2SC4081
Q73 2SC4081
Q76 2SC4081
Q5 2SA1576
Q13 2SA1576
Q57, Q58 DTC144EU
Q26 2SA1576
Q25, Q27 2SC4081
Q28, Q29 DTC144EU
VHS PB EQ AMP
VHS REC EQ AMP
S-VHS PB EQ AMP
S-VHS REC EQ AMP
PB EQ AMP BIAS GEN
REC EQ AMP BIAS GEN
NONLINEAR EMPHASIS / DE EMPHASIS
R425 0.5H DELAY LEVEL
R424 PB COLOR LEVEL
R420 S REC COLOR LEVEL
R411 N REC FM
R412 S REC FM
R413 N PB Y LEVEL
R414 S PB Y LEVEL
R410 N CARRIER
R409 S CARRIER
R408 S DEVIATION
R407 N DEVIATION
TP4 MAIN EMPHASIS OUT LEVEL
TP2 YNR MS INPUT LEVEL
R406 SUB S INPUT LEVEL
R404 N WHITE CLIP
R405 S WHITE CLIP
R402 S DARK CLIP
R403 N DARK CLIP
R401 EE Y LEVEL
TP2 N L EMPHASIS IN LEVEL
TP28 N E LIM BAL VCC
TP3 N L EMPHASIS OUT LEVEL
R415 N L EMPHASIS INPUT LEVEL
R417 LP N VIDEO RF EQ
R416 SP N VIDEO RF EQ
R418 S LP VIDEO RF EQ
R419 S SP VIDEO RF EQ
From/To 05 MIC JACK, CN2
From/To 01 MAIN, CN17
From/To 23 ENC, CN304
From/To 04 PRE/REC AMP, CN4
From/To 01 MAIN, CN16
REC/PB 99 mVp-p
REC 1.2 Vp-p
PB 0.7 Vp-p
REC/PB 0.2 Vp-p
REC/PB 1.9 Vp-p
PB 0.16 Vp-p
REC 3.0 Vp-p PB 2.6 Vp-p
REC/PB 0.6 Vp-p
PB 0.3 Vp-p
REC/PB 4.2 Vp-p
REC 1.0 Vp-p
REC 0.1 Vp-p
REC/PB 1.0 Vp-p
REC 0.8 Vp-p
REC/PB 4.4 Vp-p
REC 0.8 Vp-p PB 1.3 Vp-p
REC/PB 0.3 Vp-p
REC 1.2 Vp-p PB 0.8 Vp-p
REC 1.0 Vp-p
PB 1.2 Vp-p
REC 0.42 Vp-p PB 0.35 Vp-p
PB 0.48 Vp-p
REC 0.15 Vp-p
REC/PB 4.3 Vp-p
REC/PB 5.1 Vp-p
0.24 Vp-p
REC/PB 4.4 Vp-p
REC 0.45 Vp-p PB 1.3 Vp-p
REC/PB 0.5 Vp-p
REC 0.5 Vp-p
PB 0.8 Vp-p
REC 0.8 Vp-p
REC 0.5 Vp-p PB 0.48 Vp-p
REC 0.5 Vp-p PB 0.45 Vp-p
PB 0.5 Vp-p
PB 0.5 Vp-p
H
I
J
K
L
M
N
O
P

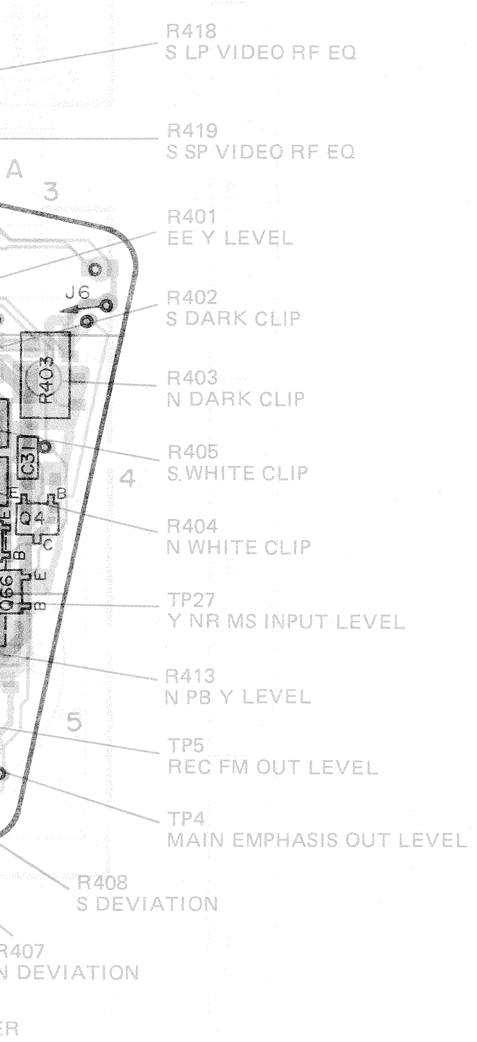
● Voltage : DC-measured with a digital voltmeter during recording and playback (SP, S-VHS mode) where voltage differ between recording and playback, the voltage during playback is shown in parenthesis.

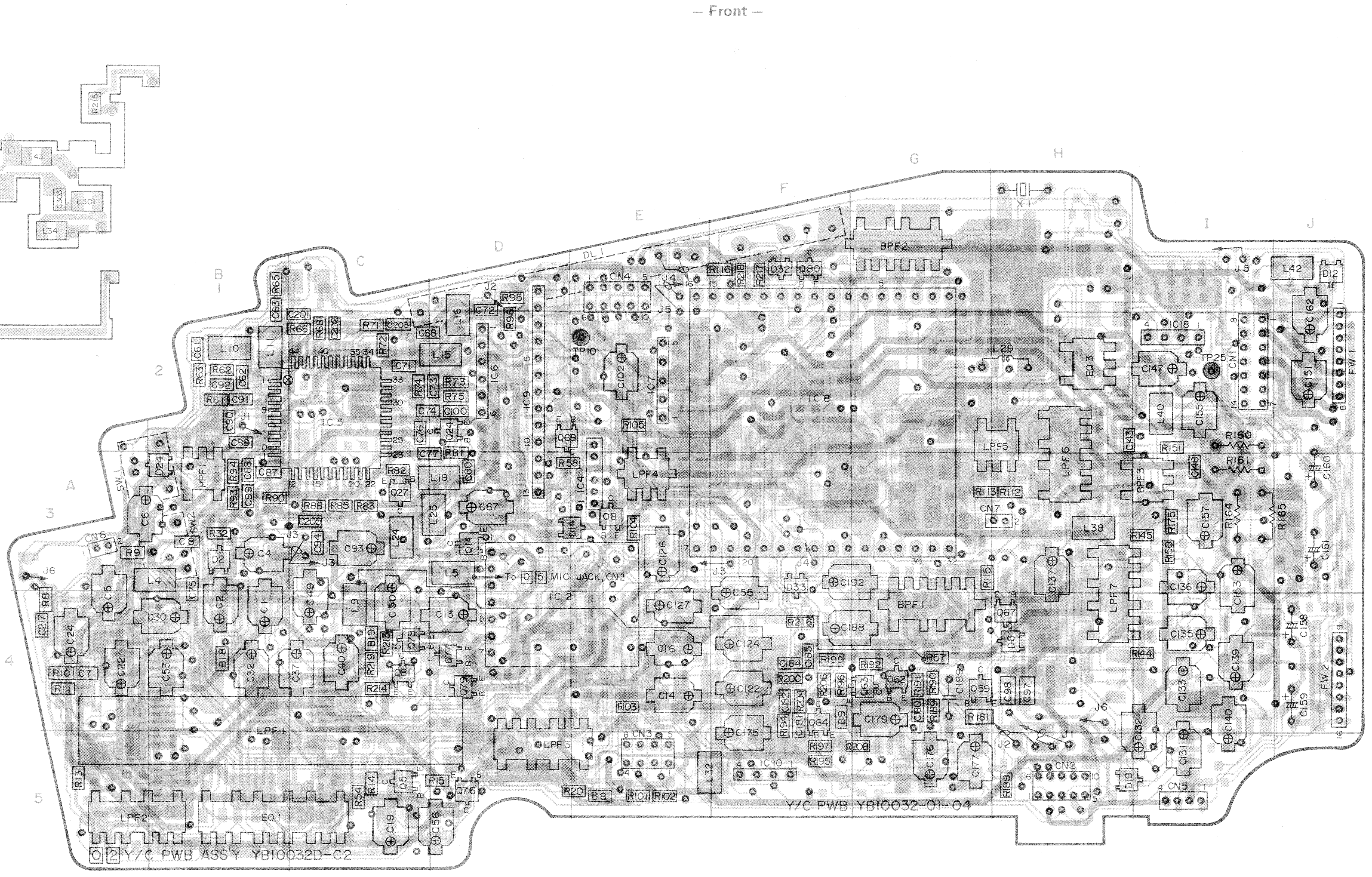
● Waveform: Measured with a color bar during recording and play back with alignment tape. (SP, S-VHS mode)

5.14 Y/C CIRCUIT BOARD

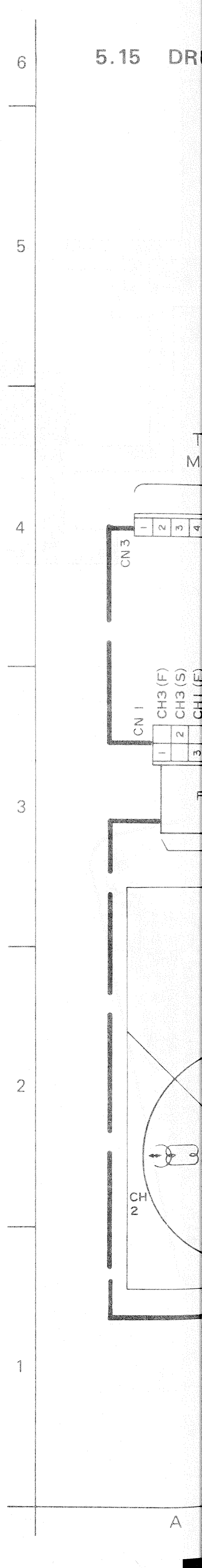

— Rear —
— Y/C SUB
TP11 VCO FREQ
R423 321 RF VCO
TP13 SUB CONVERTOR OUT
C110 VXO FREQ EQ
TP6 COLOR SYNC LEVEL
R416 SP N VIDEO RF EQ
R424 PB COLOR LEVEL
TP14 PB COLOR
TP12 VXO OUT
TP9 PB COLOR OUT LEVEL
C107 PILOT BURST PHASE
R422 BURST LEVEL
TP26 D FF
TP10 SIGNAL GND
R417 LP N VIDEO RF EQ
R425 DELAY LEVEL
R411 N REC FM
TP25 GND
TP18 Y OUT LEVEL
R412 S REC FM
TP16 COLOR OUT 1
R418 S LP VIDEO RF EQ
R421 PILOT BURST LEVEL
R419 S SP VIDEO RF EQ
TP8 PILOT BURST LEVEL
R401 EE Y LEVEL
TP30 PB 5V
R402 S DARK CLIP
R427 N PB ACC INPUT LEVEL
R403 N DARK CLIP
R405 S.WHITE CLIP
TP17 COLOR OUT 2
R404 N WHITE CLIP
TP19 VIDEO OUT LEVEL
TP27 Y NR MS INPUT LEVEL
R413 N PB Y LEVEL
TP29 0.5 H REF LEVEL
TP5 REC FM OUT LEVEL
TP4 MAIN EMPHASIS OUT LEVEL
TP15 0.5 H DELAY LEVEL
TP28 N L LIM BAL VCC
R420 S REC COLOR LEVEL
TP22 7.8 kHz TUNING
TP24 PB ACC IN
TP20 SHORT (A)
TP2 N L EMPHASIS IN LEVEL
R415 N L EMPHASIS INPUT LEVEL
R414 S PB Y LEVEL
R408 S DEVIATION
R407 N DEVIATION
TP23 0.5 H DET
TP21 SHORT (B)
TP3 N L EMPHASIS OUT LEVEL
R409 S CARRIER
R406 SUB S INPUT LEVEL
R410 N CARRIER
Y/C PWB ASS'Y YB10032D-C2
Y/C PWB YB10032-01-04
Y/C SUB PWB ASS'Y YB20387A
Y/C SUB PWB YB20
A
B
C
D
E
F
G
H
1
2
3
4
5
6


– Y/C SUB –
Y/C SUB PWB ASS'Y YB20387A
Y/C SUB PWB YB20387
D34
C221
R215
L43
Q302
R306
R305
C302
R303
R304
Q301
R301
R302
C301
C303
L301
L34


R418
S LP VIDEO RF EQ
R419
S SP VIDEO RF EQ
R401
EE Y LEVEL
R402
S DARK CLIP
R403
N DARK CLIP
R405
S.WHITE CLIP
R404
N WHITE CLIP
TP27
Y NR MS INPUT LEVEL
R413
N PB Y LEVEL
TP5
REC FM OUT LEVEL
TP4
MAIN EMPHASIS OUT LEVEL
R408
S DEVIATION
R407
N DEVIATION
ER
J6
R403
Q4
Q66
A
3
4
5

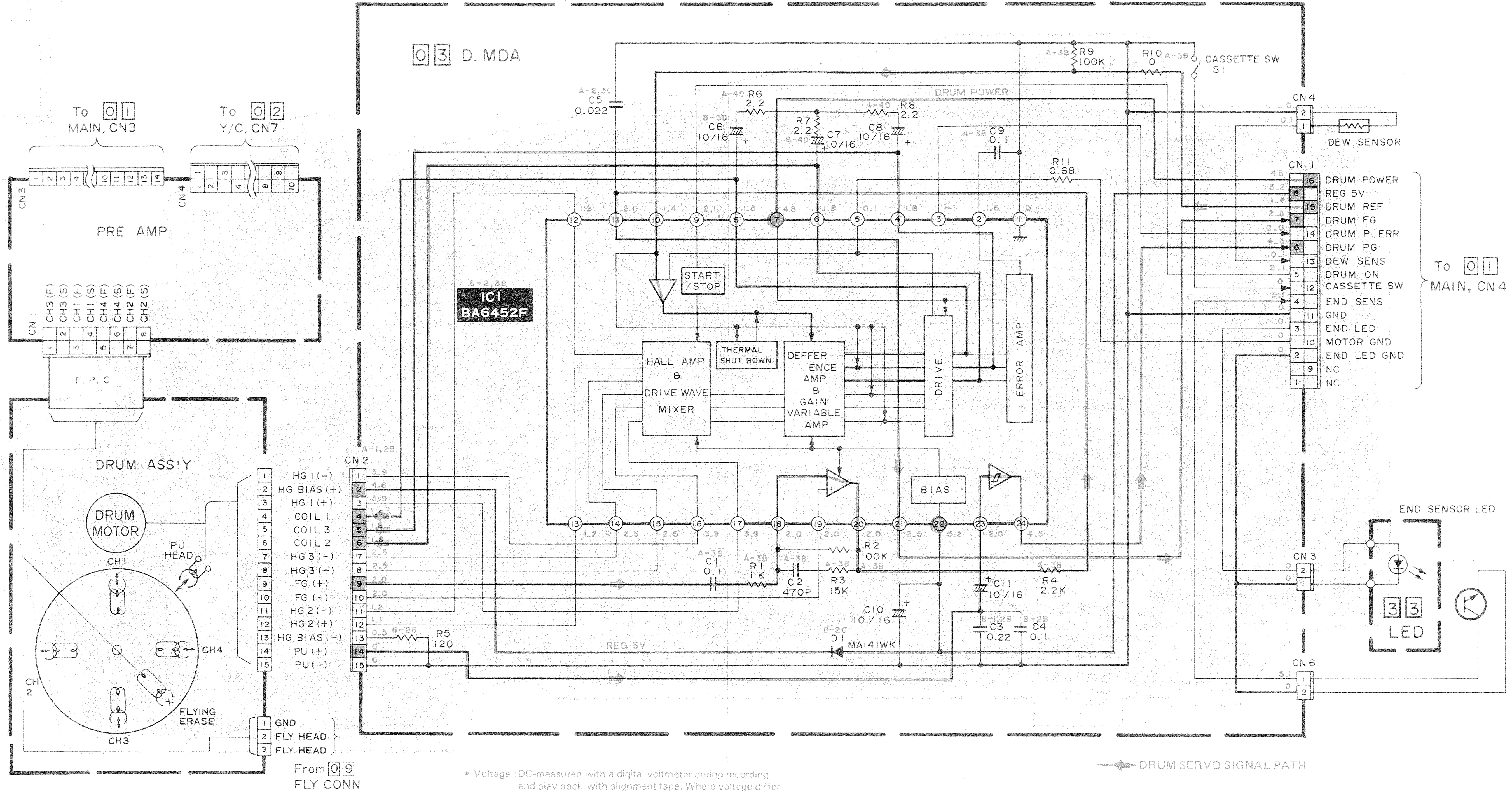

– Front –
A
B
C
D
E
F
G
H
I
J
2
3
4
5
IC5
IC2
IC4
IC6
IC7
IC8
IC9
IC10
IC18
LPF1
LPF2
LPF3
LPF4
LPF5
LPF6
LPF7
BPF1
BPF2
BPF3
HPF1
EQ1
EQ3
DL1
X1
TP10
TP25
CN1
CN2
CN3
CN4
CN5
CN6
CN7
FW1
FW2
SW1
SW2
J1
J2
J3
J4
J5
J6
L4
L5
L9
L10
L11
L15
L16
L19
L24
L25
L29
L32
L38
L40
L42
To Q5 MIC JACK, CN2
Q2 Y/C PWB ASS'Y YB10032D-C2
Y/C PWB YB10032-01-04

5.15 DR


6
5
4
3
2
1
A
T
M
CN 3
1
2
3
4
CN 1
1
2
3
CH3 (F)
CH3 (S)
CH1 (F)
CH
2

5.15 DRUM MDA SCHEMATIC DIAGRAM

• Address of chip parts
A-3B
Address
A: Diserete parts side
B: Chip parts side



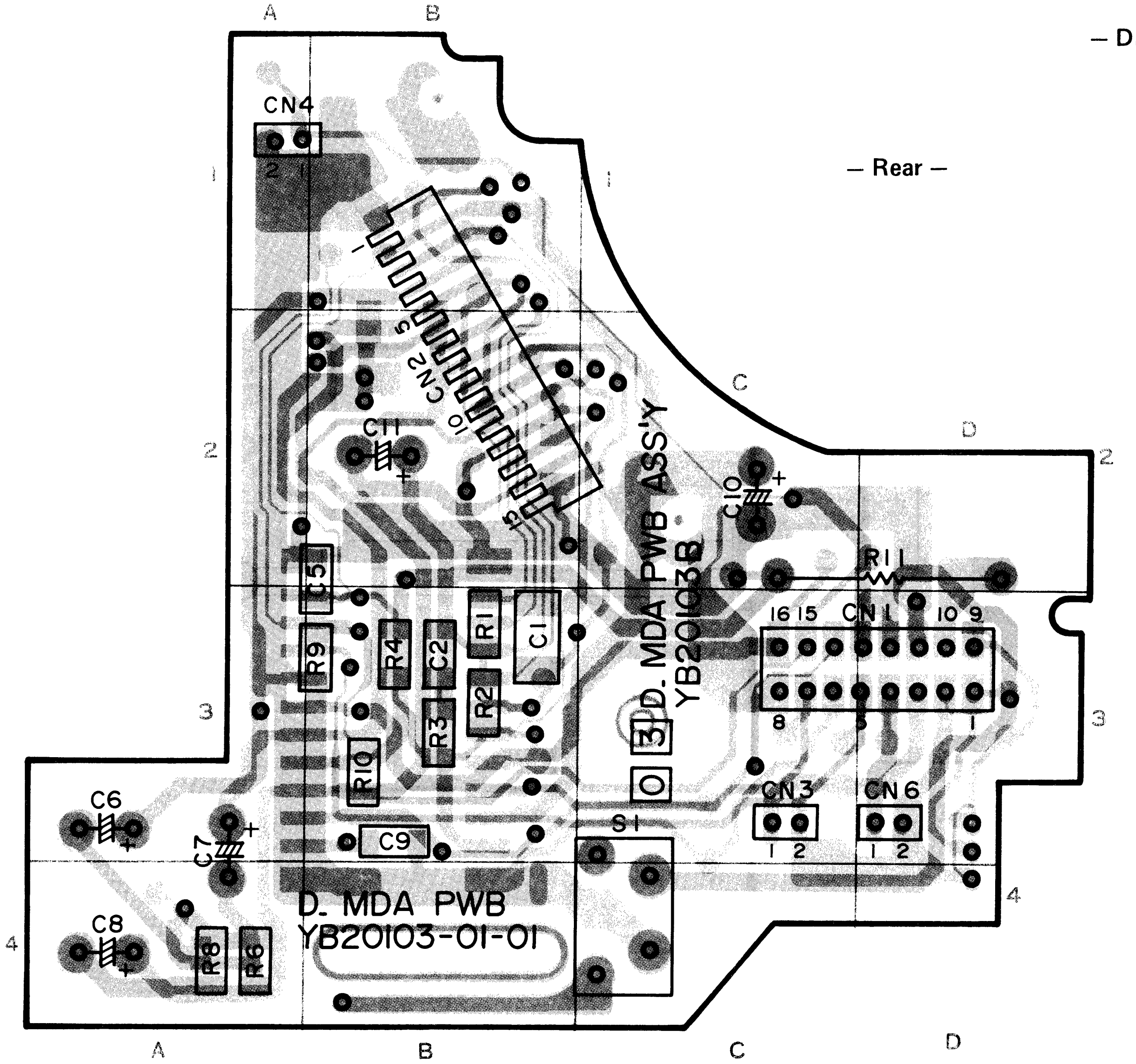
03 D. MDA
To 01 MAIN, CN3
To 02 Y/C, CN7
CN3
CN4
PRE AMP
CN1
CH3 (F)
CH3 (S)
CH1 (F)
CH1 (S)
CH4 (F)
CH4 (S)
CH2 (F)
CH2 (S)
F. P. C
DRUM ASS'Y
DRUM MOTOR
PU HEAD
CH1
CH2
CH3
CH4
FLYING ERASE
CN2
HG1 (-)
HG BIAS (+)
HG1 (+)
COIL 1
COIL 3
COIL 2
HG3 (-)
HG3 (+)
FG (+)
FG (-)
HG2 (-)
HG2 (+)
HG BIAS (-)
PU (+)
PU (-)
GND
FLY HEAD
FLY HEAD
From 09 FLY CONN
IC1 BA6452F
START /STOP
THERMAL SHUT BOWN
HALL AMP & DRIVE WAVE MIXER
DEFFER-ENCE AMP & GAIN VARIABLE AMP
DRIVE
ERROR AMP
BIAS
DRUM POWER
REG 5V
C5 0.022
R6 2.2
C6 10/16
R7 2.2
C7 10/16
R8 2.2
C8 10/16
C9 0.1
R9 100K
R10 0
CASSETTE SW S1
R11 0.68
C1 0.1
R1 1K
C2 470P
R2 100K
R3 15K
R4 2.2K
R5 120
C10 10/16
C11 10/16
C3 0.22
C4 0.1
D1 MA141WK
CN4
DEW SENSOR
CN1
DRUM POWER
REG 5V
DRUM REF
DRUM FG
DRUM P. ERR
DRUM PG
DEW SENS
DRUM ON
CASSETTE SW
END SENS
GND
END LED
MOTOR GND
END LED GND
NC
NC
To 01 MAIN, CN4
END SENSOR LED
CN3
33 LED
CN6
DRUM SERVO SIGNAL PATH

• Voltage :DC-measured with a digital voltmeter during recording and play back with alignment tape. Where voltage differ between recording and playback, the voltage during playback is shown in parenthesis.

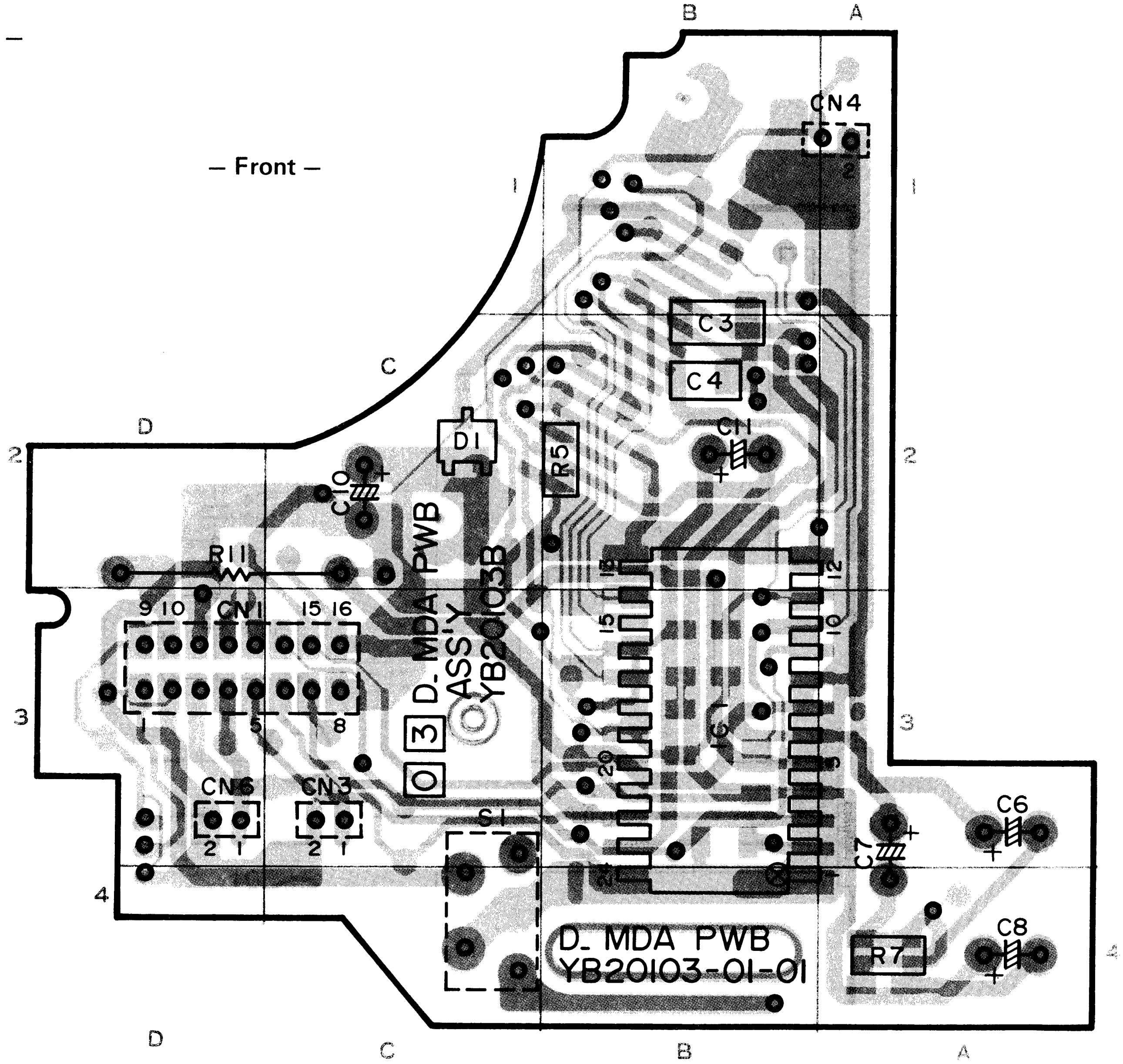
5.16 DRUM MDA & UPPER DRUM CIRCUIT BOARDS

— DRUM MDA —

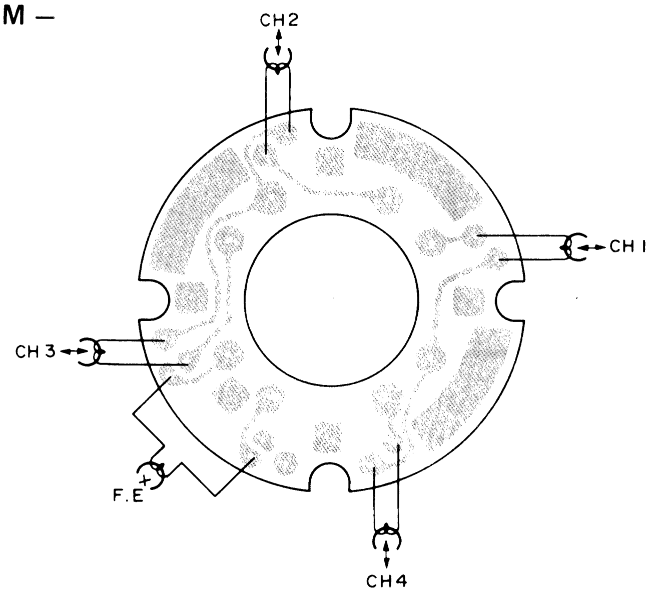
— Rear —


A
B
C
D
1
2
3
4
CN4
2
CN2
1
5
10
15
C11
C10
R11
CN1
16 15
10 9
8
5
1
CN3
1 2
CN6
1 2
S1
C5
R9
R4
C2
R1
C1
R2
R3
R10
C9
C6
C7
C8
R8
R6
D. MDA PWB ASS'Y
YB20103B
0 3
D. MDA PWB
YB20103-01-01

— Front —


A
B
C
D
1
2
3
4
CN4
C3
C4
D1
R5
C11
C10
R11
CN1
9 10
15 16
5
8
D. MDA PWB ASS'Y
YB20103B
0 3
15
11
12
10
20
CN6
2 1
CN3
2 1
S1
C6
C7
C8
R7
D. MDA PWB
YB20103-01-01

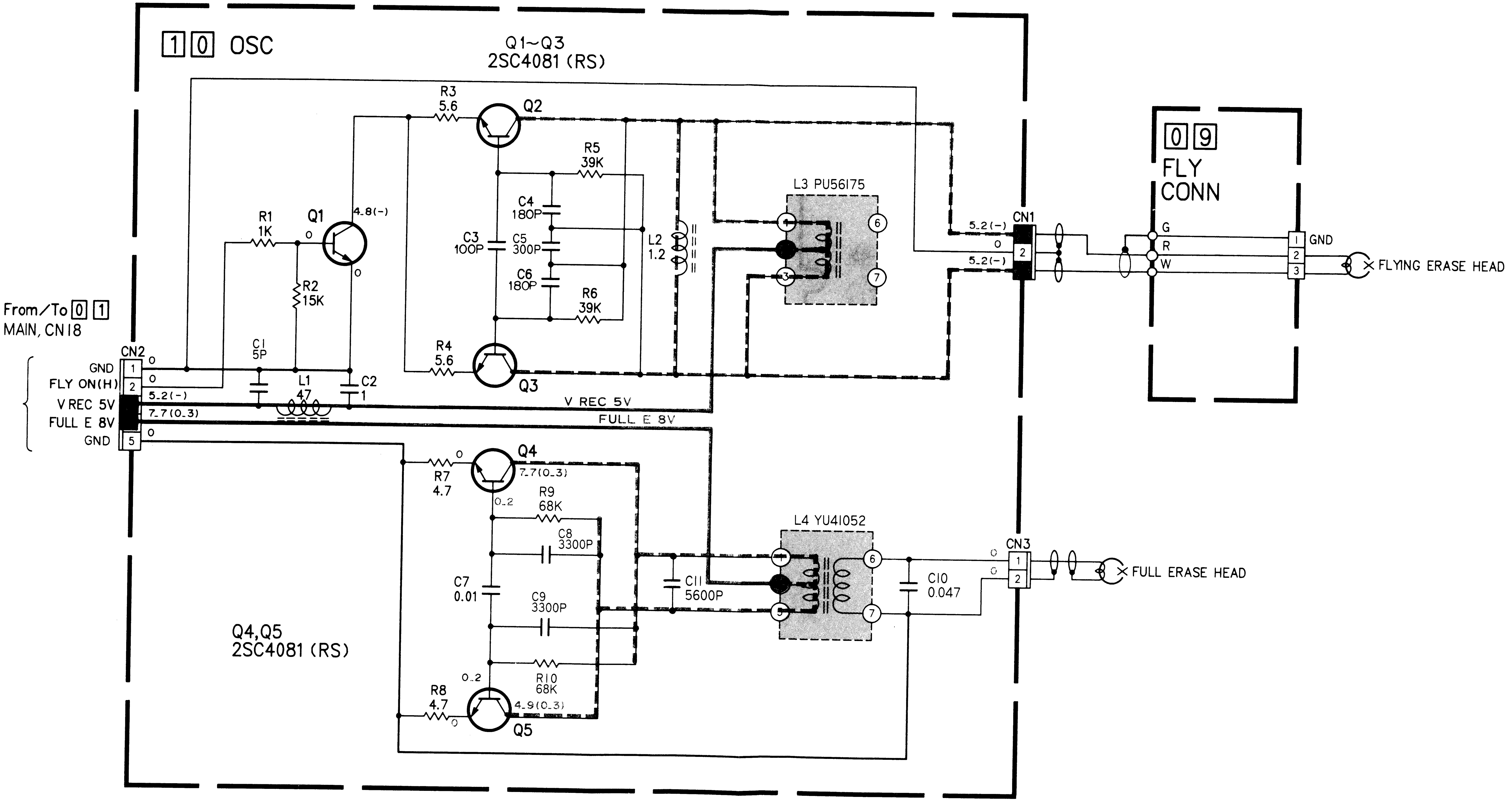
— UPPER DRUM —


CH2
CH1
CH3
CH4
F.E

3 1 UPPER DRUM PWB
YDM3021-3

5.17 OSC SCHEMATIC DIAGRAM

- Voltage : DC measured with a digital voltmeter during recording and play back with alignment tape. Where voltage differ between recording and playback, the voltage during playback is shown in parenthesis.



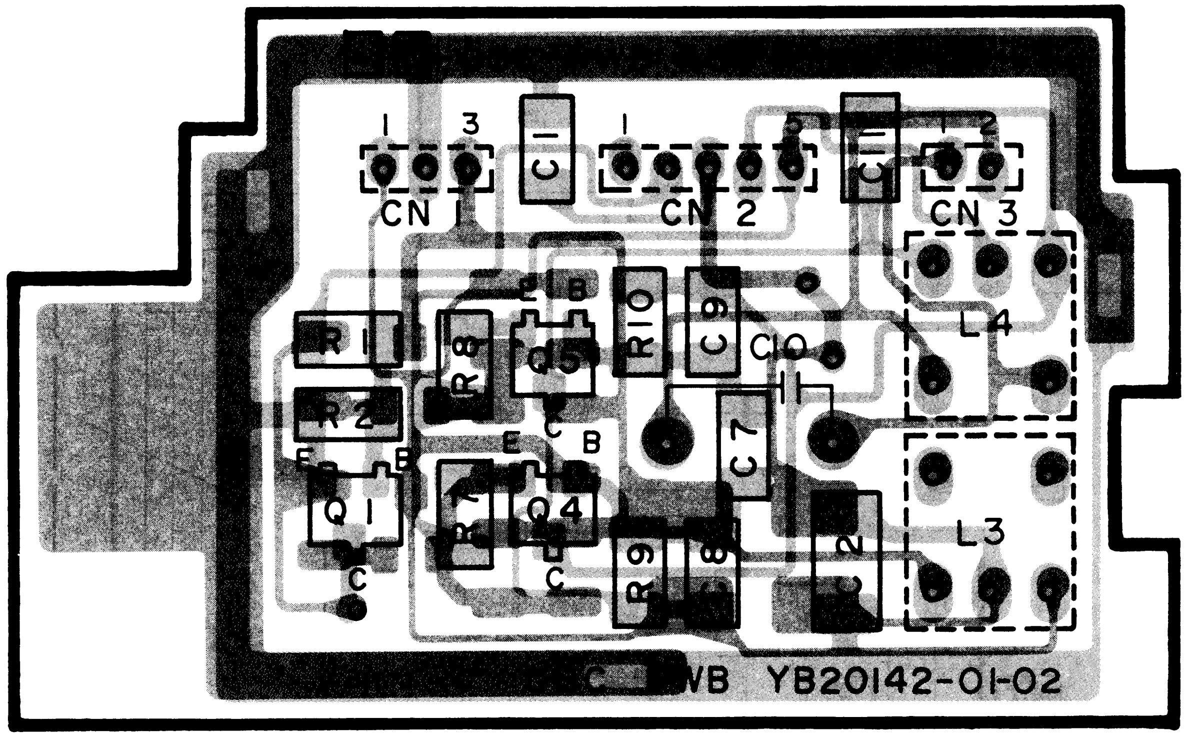
10 OSC
Q1~Q3
2SC4081 (RS)
R3 5.6
Q2
R5 39K
L3 PU56175
C4 180P
C3 100P
C5 300P
C6 180P
R6 39K
L2 1.2
R1 1K
Q1
4.8(-)
R2 15K
From/To 01
MAIN, CN18
CN2
GND
FLY ON(H)
V REC 5V
FULL E 8V
GND
5.2(-)
7.7(0.3)
C1 5P
L1 47
C2 1
R4 5.6
Q3
V REC 5V
FULL E 8V
CN1
5.2(-)
5.2(-)
09
FLY CONN
G
R
W
GND
FLYING ERASE HEAD
Q4
R7 4.7
7.7(0.3)
0.2
R9 68K
C8 3300P
L4 YU41052
C7 0.01
C9 3300P
C11 5600P
C10 0.047
CN3
FULL ERASE HEAD
Q4,Q5
2SC4081 (RS)
R8 4.7
0.2
R10 68K
4.9(0.3)
Q5

•Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

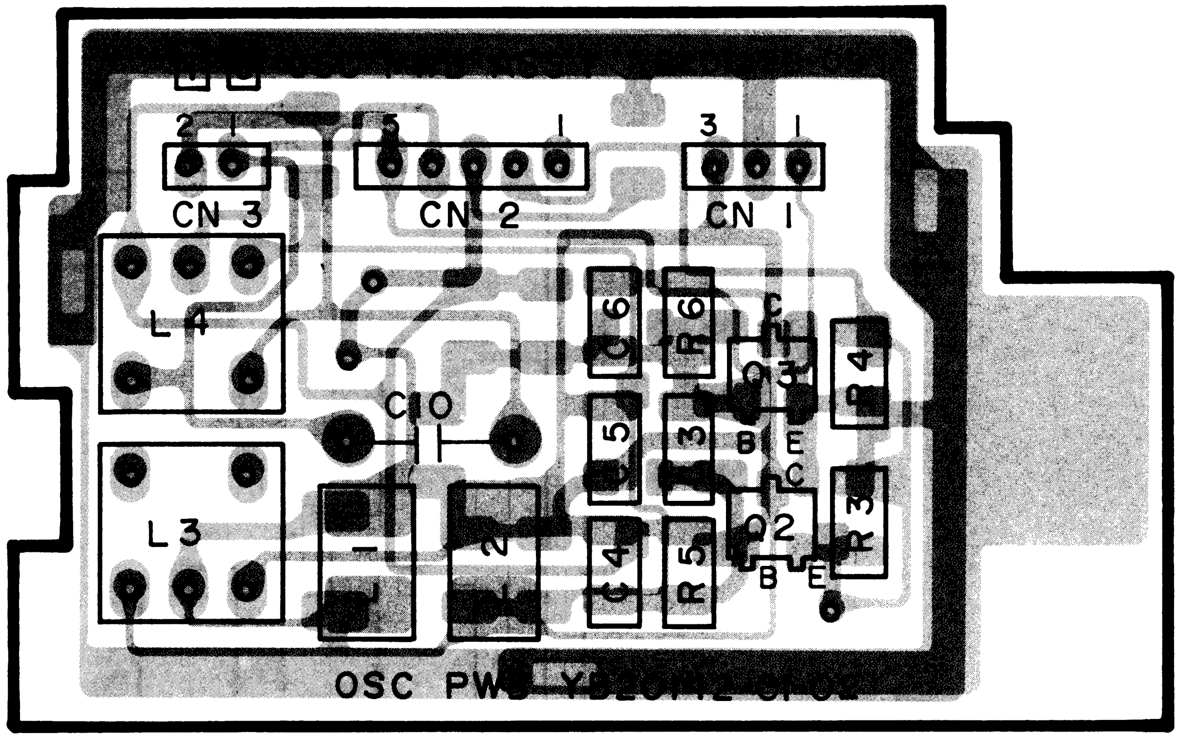
5.18 OSC & FLY CONN CIRCUIT BOARDS

— OSC —

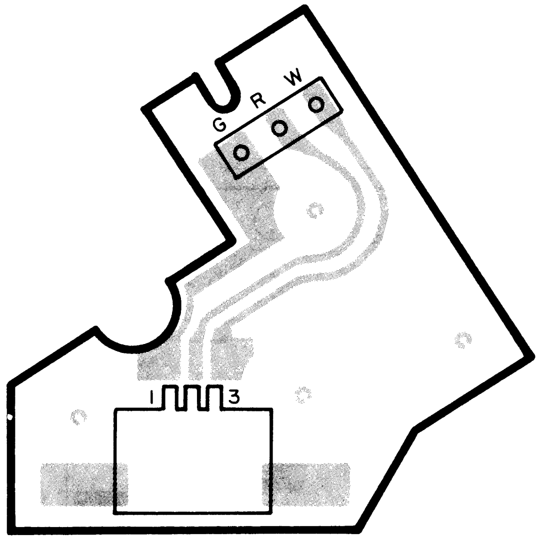
— Rear —


1 3
CN 1
C1
1
CN 2
C11
1 2
CN 3
R1
R2
R8
Q5
E B
R10
C9
C10
L4
E B
Q1
C
E
C
B
Q4
C
R7
C7
R9
R8
C2
L3
OSC PWB YB20142-01-02

— Front —

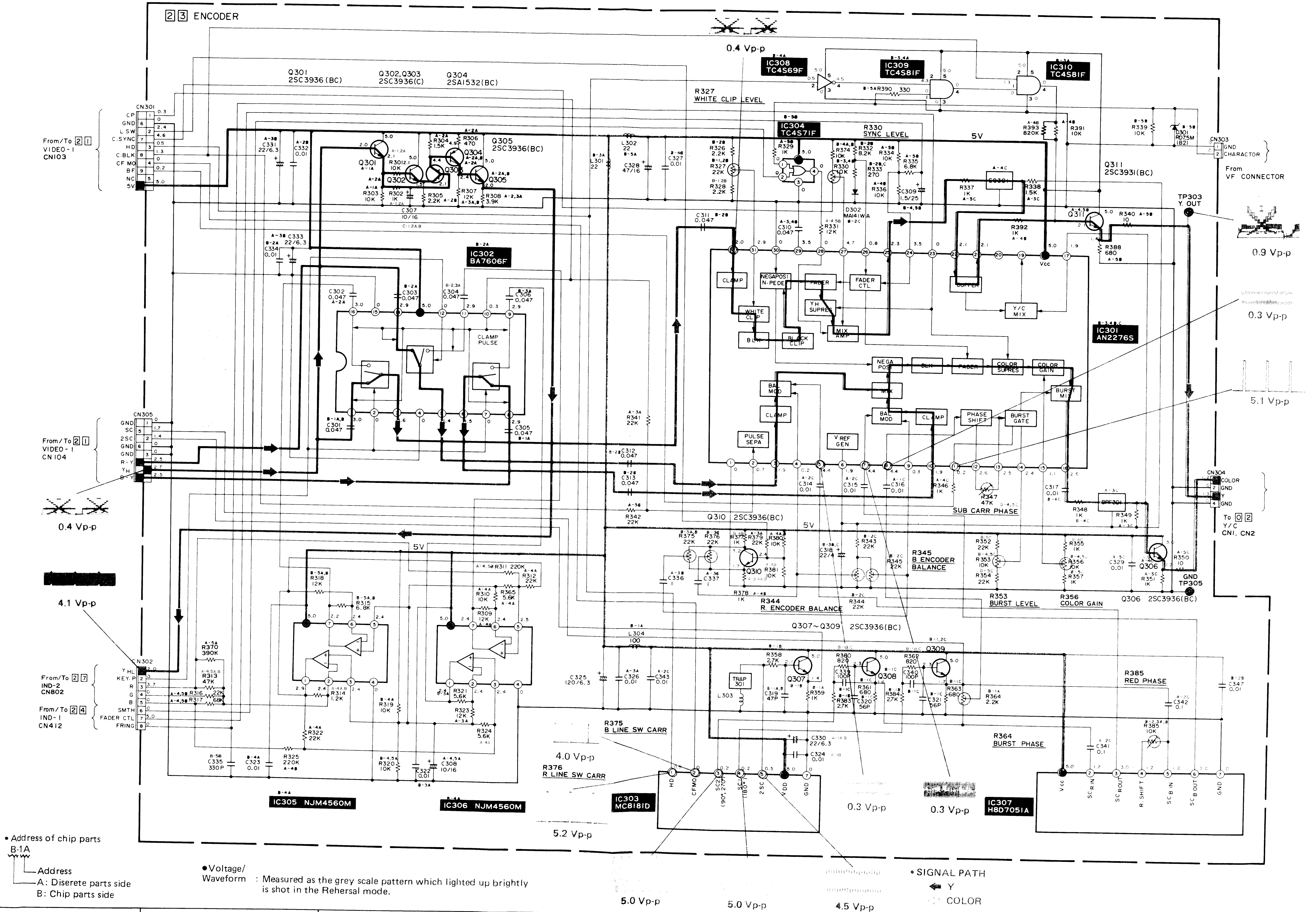

2 1
CN 3
5 1
CN 2
3 1
CN 1
L4
C10
L3
C6
R6
C
Q3
R4
C5
R3
B E
C
Q2
R3
C4
R5
B E
OSC PWB YB20142-01-02

— FLY CONN —



09 FLY CONN PWB ASS'Y
YB30047A-01
FLY CONN PWB
YB30047-01-01

5.19 ENCODER SCHEMATIC DIAGRAM


23 ENCODER
CN301
CP
GND
L.SW
C.SYNC
HD
C.BLK
CF MO
BF
NC
5V
From/To 21
VIDEO-1
CN103
CN305
GND
SC
2SC
GND
GND
R-Y
YH
B-Y
From/To 21
VIDEO-1
CN104
0.4 Vp-p
4.1 Vp-p
CN302
YHL
KEY.P
R
G
B
SMTH
FADER CTL
FRING
From/To 27
IND-2
CN802
From/To 24
IND-1
CN412
Q301
2SC3936(BC)
Q302,Q303
2SC3936(C)
Q304
2SA1532(BC)
Q305
2SC3936(BC)
IC302
BA7606F
CLAMP PULSE
IC305 NJM4560M
IC306 NJM4560M
IC308
TC4S69F
IC309
TC4S81F
IC310
TC4S81F
IC304
TC4S71F
R327
WHITE CLIP LEVEL
R330
SYNC LEVEL
5V
IC301
AN2276S
CLAMP
NEGAPOST
N-PEDE
FADER
FADER CTL
WHITE CLIP
YH SUPRE
MIX AMP
BLK
BLACK CLIP
BUFFER
Y/C MIX
NEGA POS
COLOR SUPRES
COLOR GAIN
BAL MOD
MIX
BURST MIX
PHASE SHIFT
BURST GATE
PULSE SEPA
V REF GEN
SUB CARR PHASE
Q311
2SC3931(BC)
TP303
Y. OUT
0.9 Vp-p
0.3 Vp-p
5.1 Vp-p
CN303
GND
CHARACTOR
From
VF CONNECTOR
CN304
COLOR
GND
Y
GND
To 02
Y/C
CN1, CN2
GND
TP305
Q306 2SC3936(BC)
Q310 2SC3936(BC)
R345
B ENCODER
BALANCE
R344
R. ENCODER BALANCE
R353
BURST LEVEL
R356
COLOR GAIN
Q307~Q309 2SC3936(BC)
TRAP 301
R385
RED PHASE
R364
BURST PHASE
R375
B LINE SW CARR
R376
R LINE SW CARR
4.0 Vp-p
5.2 Vp-p
IC303
MC8181D
HD
CFMO
SC2 (90°, 270°)
SC1 (180°)
2SC
VDD
GND
0.3 Vp-p
0.3 Vp-p
IC307
H8D7051A
Vcc
SC RIN
SC ROUT
R SHIFT
SC BIN
SC BOUT
GND
5.0 Vp-p
5.0 Vp-p
4.5 Vp-p
A
B
C
E
F
G
H
1
2
3
4
5
6

• Address of chip parts
B-1A
└─Address
A: Diserete parts side
B: Chip parts side

●Voltage/
Waveform : Measured as the grey scale pattern which lighted up brightly is shot in the Rehersal mode.

• SIGNAL PATH
Y
COLOR

6

5

4

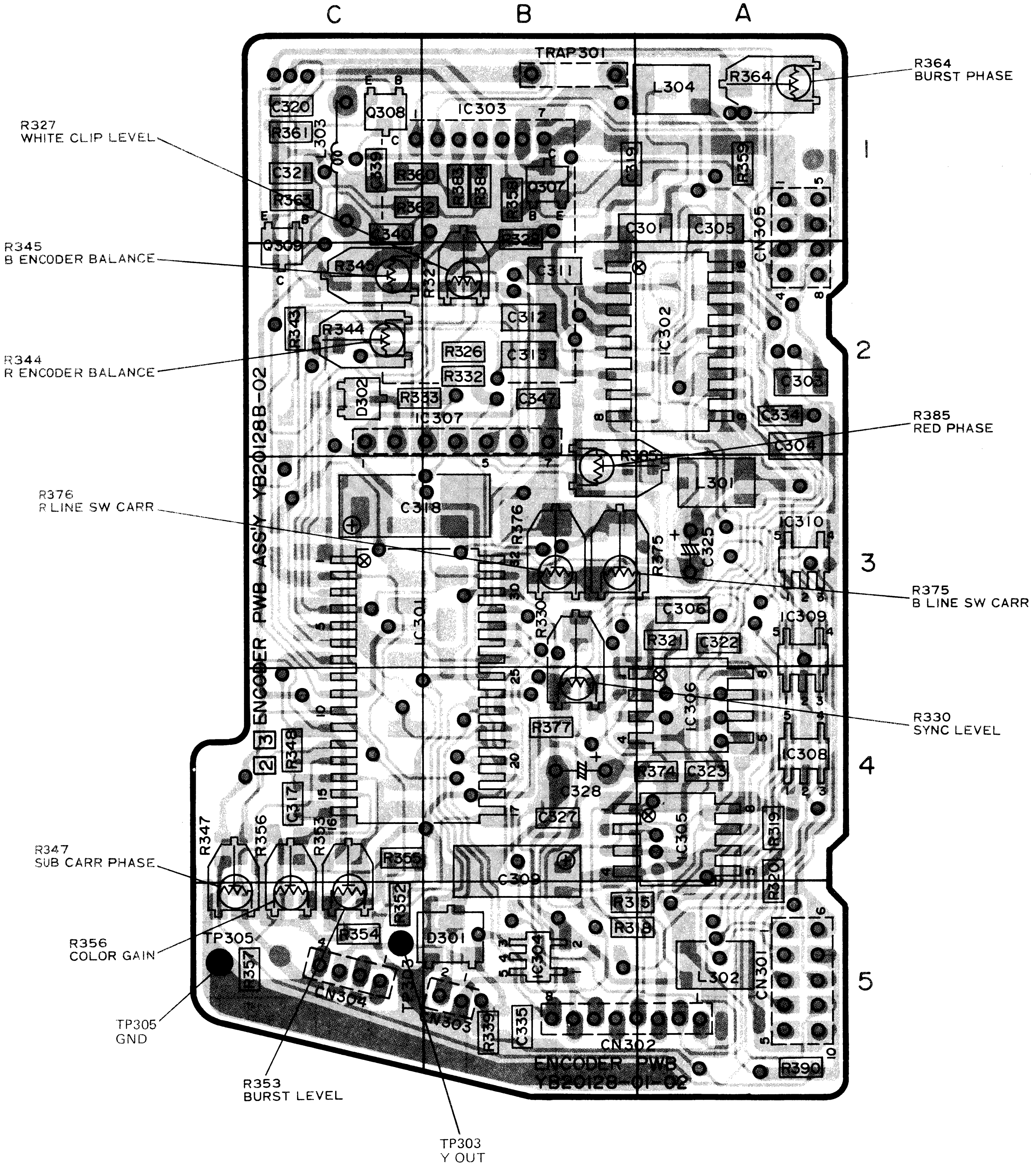
3

2

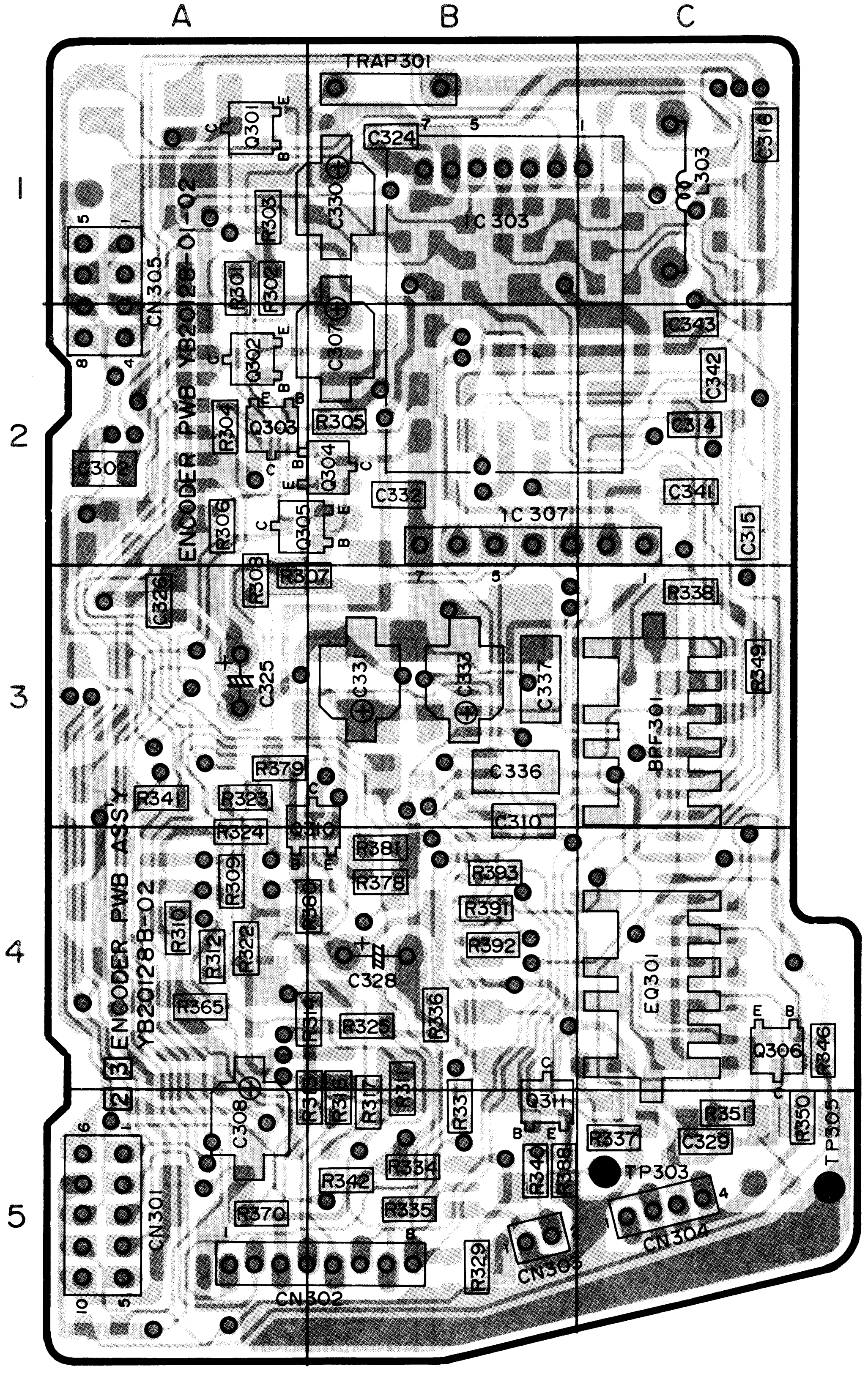
1

5.20 ENCODER CIRCUIT BOARD

— Rear —


C
B
A
TRAP301
L304
IC303
Q308
IC302
IC301
IC307
IC306
IC305
IC308
IC309
IC310
CN305
CN301
CN302
CN303
CN304
D301
D302
L301
L302
1
2
3
4
5
R364
BURST PHASE
R327
WHITE CLIP LEVEL
R345
B ENCODER BALANCE
R344
R ENCODER BALANCE
R385
RED PHASE
R376
R LINE SW CARR
R375
B LINE SW CARR
R330
SYNC LEVEL
R347
SUB CARR PHASE
R356
COLOR GAIN
TP305
TP305
GND
R353
BURST LEVEL
TP303
Y OUT
ENCODER PWB ASSY YB20128B-02
ENCODER PWB YB20128-01-02

— Front —


A
B
C
TRAP301
IC303
IC307
BPF301
EQ301
CN305
CN301
CN302
CN303
CN304
TP303
TP305
1
2
3
4
5
ENCODER PWB YB20128-01-02
ENCODER PWB ASSY YB20128B-02

A B C

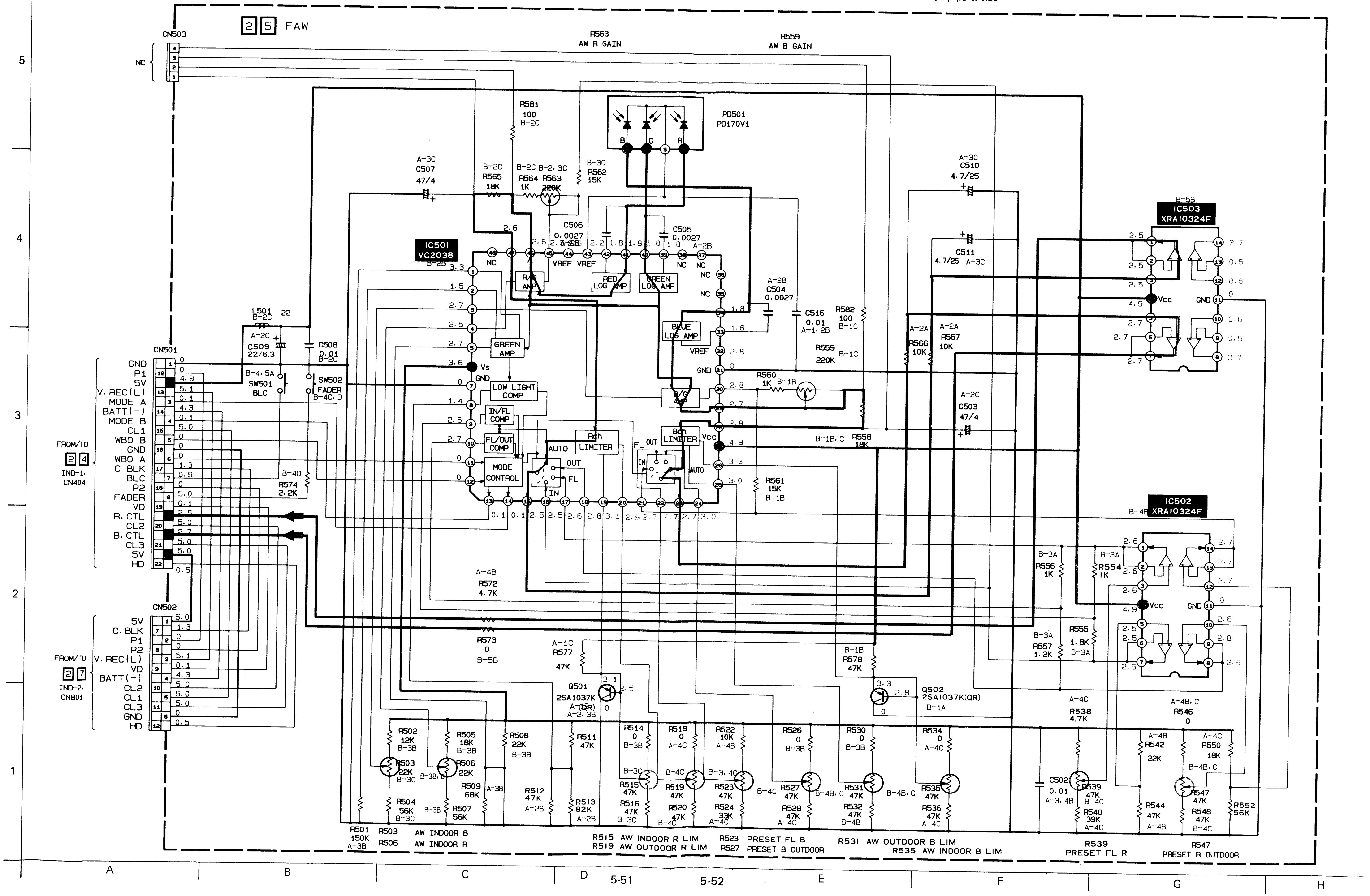
E F G H

5.21 FAW SCHEMATIC DIAGRAM

● Voltage : Measured as the grey scale pattern which lighted up brightly is shot in the Rehersal mode.

• Address of chip parts
A-2C
└ Address
└ A: Diserete parts side
B: Chip parts side

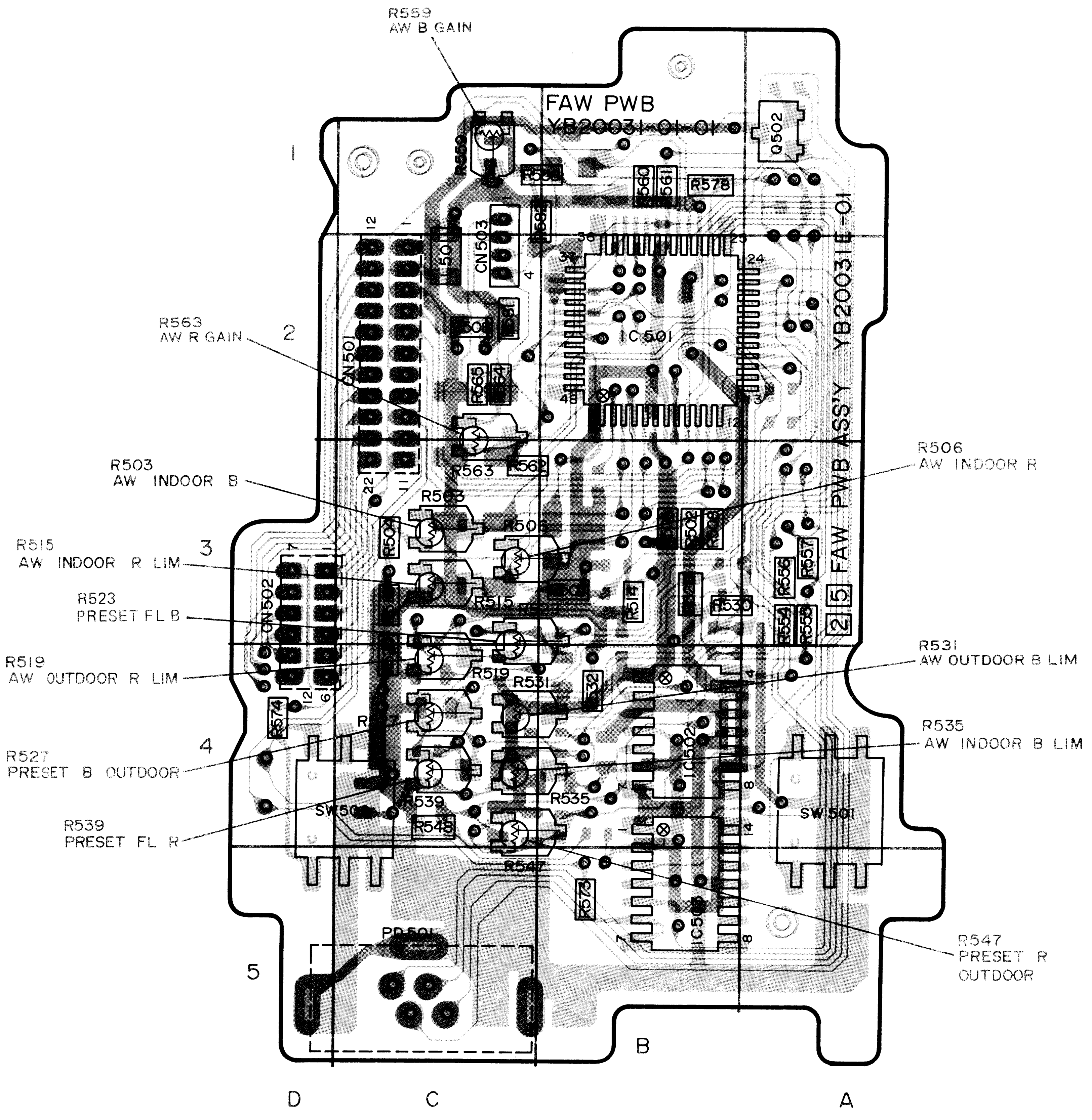
⬅ FAW SIGNAL PATH



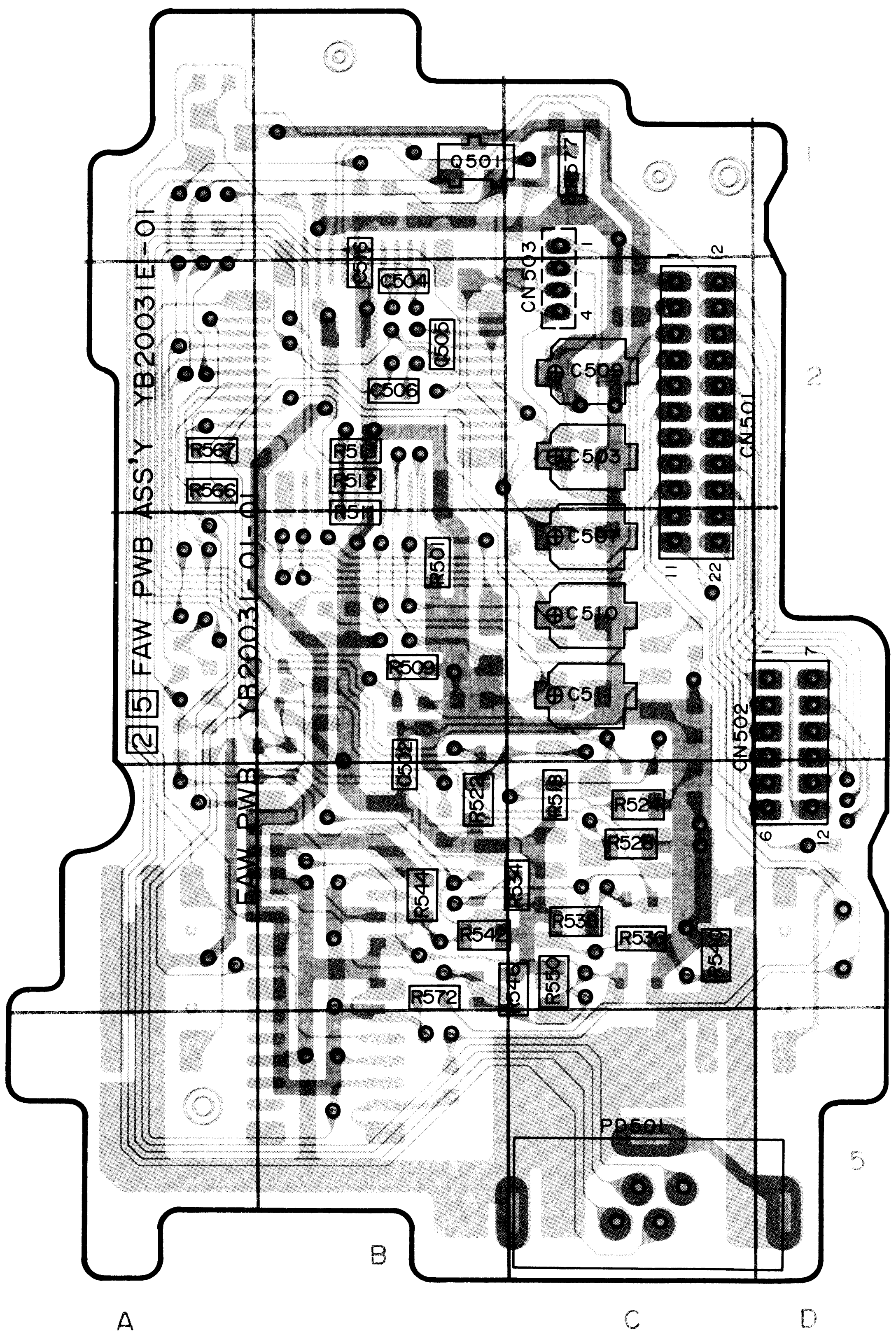
25 FAW
CN503
NC
R563 AW R GAIN
R559 AW B GAIN
R581 100 B-2C
PD501 PD170V1
B G R
A-3C C507 47/4
B-2C R565 18K
B-2C R564 1K
B-2,3C R563 220K
B-3C R562 15K
C506 0.0027 A-2B
C505 0.0027 A-2B
A-3C C510 4.7/25
C511 4.7/25 A-3C
IC501 VC2038 B-2B
VREF VREF NC NC
R/G AMP
RED LOG AMP
GREEN LOG AMP
A-2B C504 0.0027
C516 0.01 A-1,2B
R582 100 B-1C
R559 220K B-1C
BLUE LOG AMP
VREF GND Vs GND Vcc
B/G AMP
R560 1K B-1B
GREEN AMP
LOW LIGHT COMP
IN/FL COMP
FL/OUT COMP
MODE CONTROL
AUTO OUT FL IN
Rch LIMITER
Bch LIMITER
R558 18K B-1B,C
R561 15K B-1B
L501 22 B-2C
A-2C C509 22/6.3
C508 0.01 B-2C
B-4,5A SW501 BLC
SW502 FADER B-4C,D
B-4D R574 2.2K
A-2A R566 10K
A-2A R567 10K
A-2C C503 47/4
IC503 XRA10324F B-5B
IC502 XRA10324F B-4B
CN501
GND P1 5V V.REC(L) MODE A BATT(-) MODE B CL1 WBO B GND WBO A C BLK BLC P2 FADER VD R.CTL CL2 B.CTL CL3 5V HD
FROM/TO 24 IND-1, CN404
CN502
5V C.BLK P1 P2 V.REC(L) VD BATT(-) CL2 CL1 CL3 GND HD
FROM/TO 27 IND-2, CN801
A-4B R572 4.7K
R573 0 B-5B
A-1C R577 47K
Q501 2SA1037K(QR) A-2,3B
B-1B R578 47K
Q502 2SA1037K(QR) B-1A
B-3A R556 1K
B-3A R554 1K
B-3A R557 1.2K
R555 1.8K B-3A
A-4C R538 4.7K
A-4B,C R546 0
R502 12K B-3B
R505 18K B-3B
R508 22K B-3B
R511 47K
R514 0 B-3B
R518 0 A-4C
R522 10K A-4B
R526 0 B-3B
R530 0 B-3B
R534 0 A-4C
R503 22K B-3C
R506 22K B-3B,C
R509 68K A-3B
R504 56K B-3C
R507 56K B-3B
R512 47K A-2B
R513 82K A-2B
R515 47K B-3C
R516 47K B-3C
R519 47K B-4C
R520 47K B-4C
R523 47K B-3,4C
R524 33K A-4C
R527 47K B-4C
R528 47K A-4C
R531 47K B-4B,C
R532 47K B-4B
R535 47K B-4B,C
R536 47K A-4C
C502 0.01 A-3,4B
R539 47K B-4C
R540 39K A-4C
A-4B R542 22K
A-4C R550 18K B-4B,C
R544 47K A-4B
R547 47K
R548 47K B-4C
R552 56K
R501 150K A-3B
R503 R506 AW INDOOR B AW INDOOR R
R515 AW INDOOR R LIM
R519 AW OUTDOOR R LIM
R523 PRESET FL B
R527 PRESET B OUTDOOR
R531 AW OUTDOOR B LIM
R535 AW INDOOR B LIM
R539 PRESET FL R
R547 PRESET R OUTDOOR
6 5 4 3 2 1
A B C D E F G H

5.22 FAW CIRCUIT BOARD

— Rear —

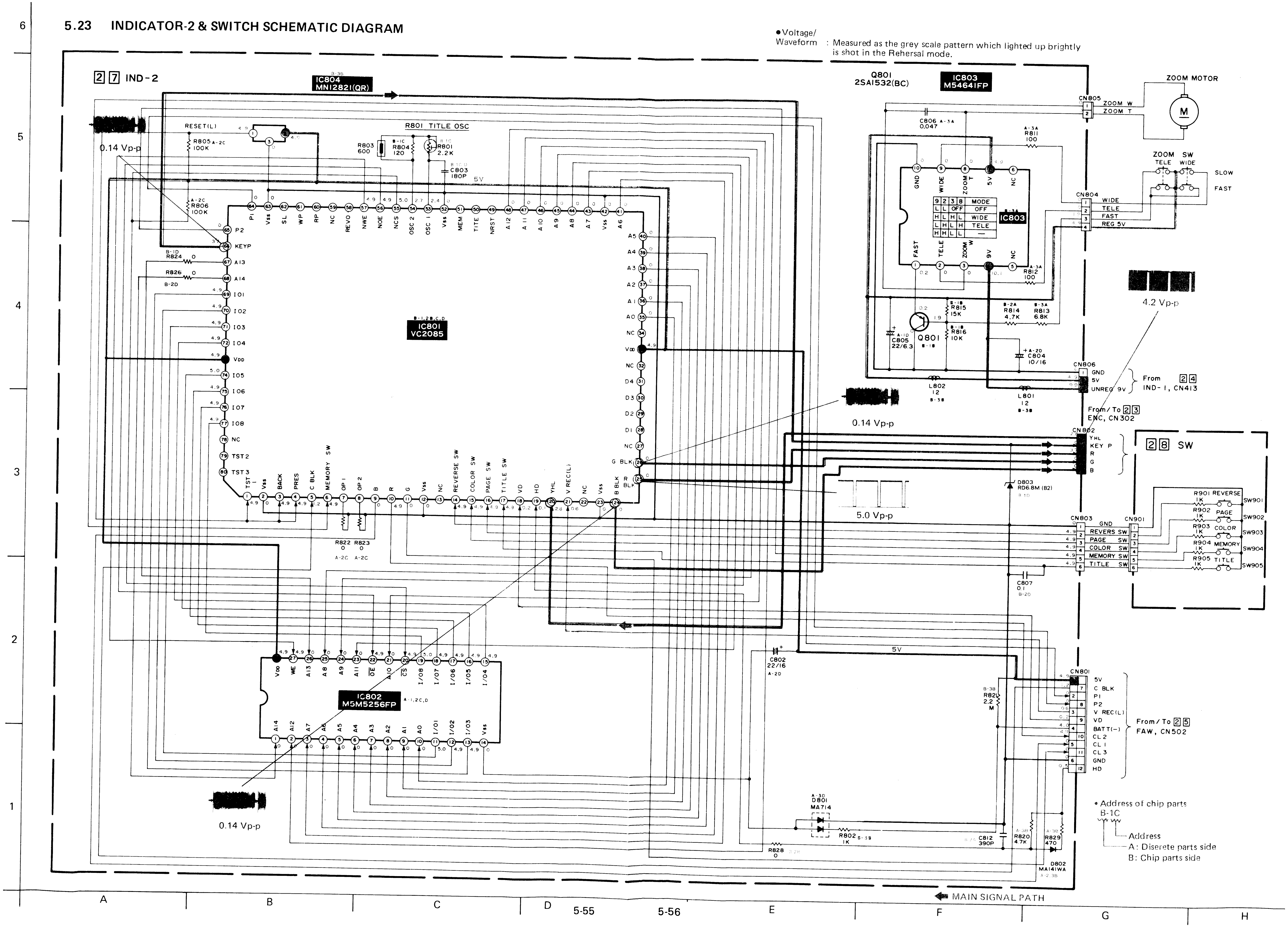

R559
AW B GAIN
R563
AW R GAIN
R503
AW INDOOR B
R515
AW INDOOR R LIM
R523
PRESET FL B
R519
AW OUTDOOR R LIM
R527
PRESET B OUTDOOR
R539
PRESET FL R
R506
AW INDOOR R
R531
AW OUTDOOR B LIM
R535
AW INDOOR B LIM
R547
PRESET R OUTDOOR
FAW PWB
YB20031-01-01
FAW PWB ASS'Y YB20031E-01
IC501
IC502
CN501
CN502
CN503
Q502
SW501
SW502
PD501
1
2
3
4
5
A
B
C
D

— Front —


FAW PWB ASS'Y YB20031E-01
FAW PWB
YB20031-01-01
Q501
CN501
CN502
CN503
C503
C504
C505
C506
C509
C510
PD501
1
2
3
4
5
A
B
C
D

5.23 INDICATOR-2 & SWITCH SCHEMATIC DIAGRAM

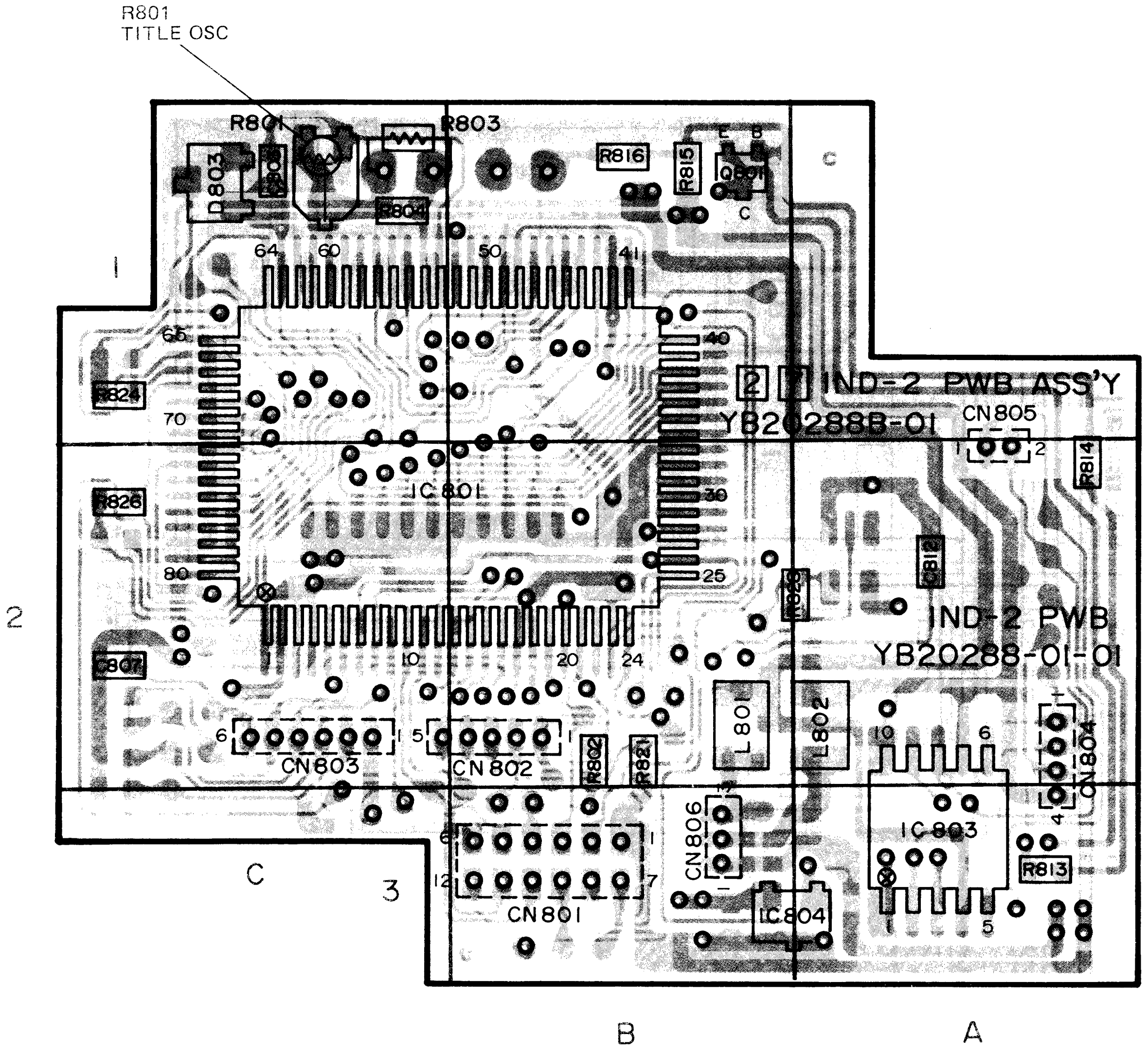
●Voltage/
Waveform : Measured as the grey scale pattern which lighted up brightly is shot in the Rehersal mode.


6
5
4
3
2
1
A
B
C
D
E
F
G
H
2 7 IND-2
IC804
MN12821(QR)
IC801
VC2085
IC802
M5M5256FP
Q801
2SA1532(BC)
IC803
M5464IFP
RESET(L)
R805 100K
R806 100K
R801 TITLE OSC
R803 600
R804 120
R801 2.2K
C803 180P
5V
R824 0
R826 0
R822 0
R823 0
P2
KEYP
A13
A14
IO1
IO2
IO3
IO4
VDD
IO5
IO6
IO7
IO8
NC
TST2
TST3
P1
Vss
SL
WP
RP
NC
REVO
NWE
NOE
NCS
OSC 2
OSC 1
Vss
MEM
TITE
NRST
A12
A11
A10
A9
A8
A7
Vss
A6
A5
A4
A3
A2
A1
A0
NC
VDD
NC
D4
D3
D2
D1
NC
G BLK
R BLK
TST 1
Vss
BACK
PRES
C BLK
MEMORY SW
OP 1
OP 2
B
R
G
Vss
NC
REVERSE SW
COLOR SW
PAGE SW
TITLE SW
VD
HD
YHL
V REC(L)
NC
Vss
VDD
WE
A13
A8
A9
A11
OE
A10
CS
I/08
I/07
I/06
I/05
I/04
A14
A12
A7
A6
A5
A4
A3
A2
A1
A0
I/01
I/02
I/03
Vss
0.14 Vp-p
0.14 Vp-p
0.14 Vp-p
5.0 Vp-p
4.2 Vp-p
C806 0.047
R811 100
GND
WIDE
ZOOM T
5V
NC
FAST
TELE
ZOOM W
9V
NC
9 2 3 8 MODE
L L OFF OFF
H L H L WIDE
L H L H TELE
H H L L —
R812 100
R815 15K
R816 10K
R814 4.7K
R813 6.8K
C805 22/6.3
Q801
C804 10/16
L802 12
L801 12
ZOOM MOTOR
CN805
ZOOM W
ZOOM T
M
ZOOM SW
TELE WIDE
SLOW
FAST
CN804
WIDE
TELE
FAST
REG 5V
CN806
GND
5V
UNREG 9V
From 2 4
IND-1, CN413
From/To 2 3
ENC, CN302
CN802
YHL
KEY P
R
G
B
2 8 SW
D803
RD6.8M (B2)
CN803
GND
REVERS SW
PAGE SW
COLOR SW
MEMORY SW
TITLE SW
CN901
R901 REVERSE 1K
R902 PAGE 1K
R903 COLOR 1K
R904 MEMORY 1K
R905 TITLE 1K
SW901
SW902
SW903
SW904
SW905
C807 0.1
5V
C802 22/16
CN801
5V
C BLK
P1
P2
V REC(L)
VD
BATT(-)
CL 2
CL 1
CL 3
GND
HD
From/To 2 5
FAW, CN502
R821 2.2M
D801 MA714
R802 1K
C812 390P
R820 4.7K
R829 470
R828 0
D802 MA141WA
MAIN SIGNAL PATH

• Address of chip parts
B-1C
Address
A: Diserete parts side
B: Chip parts side

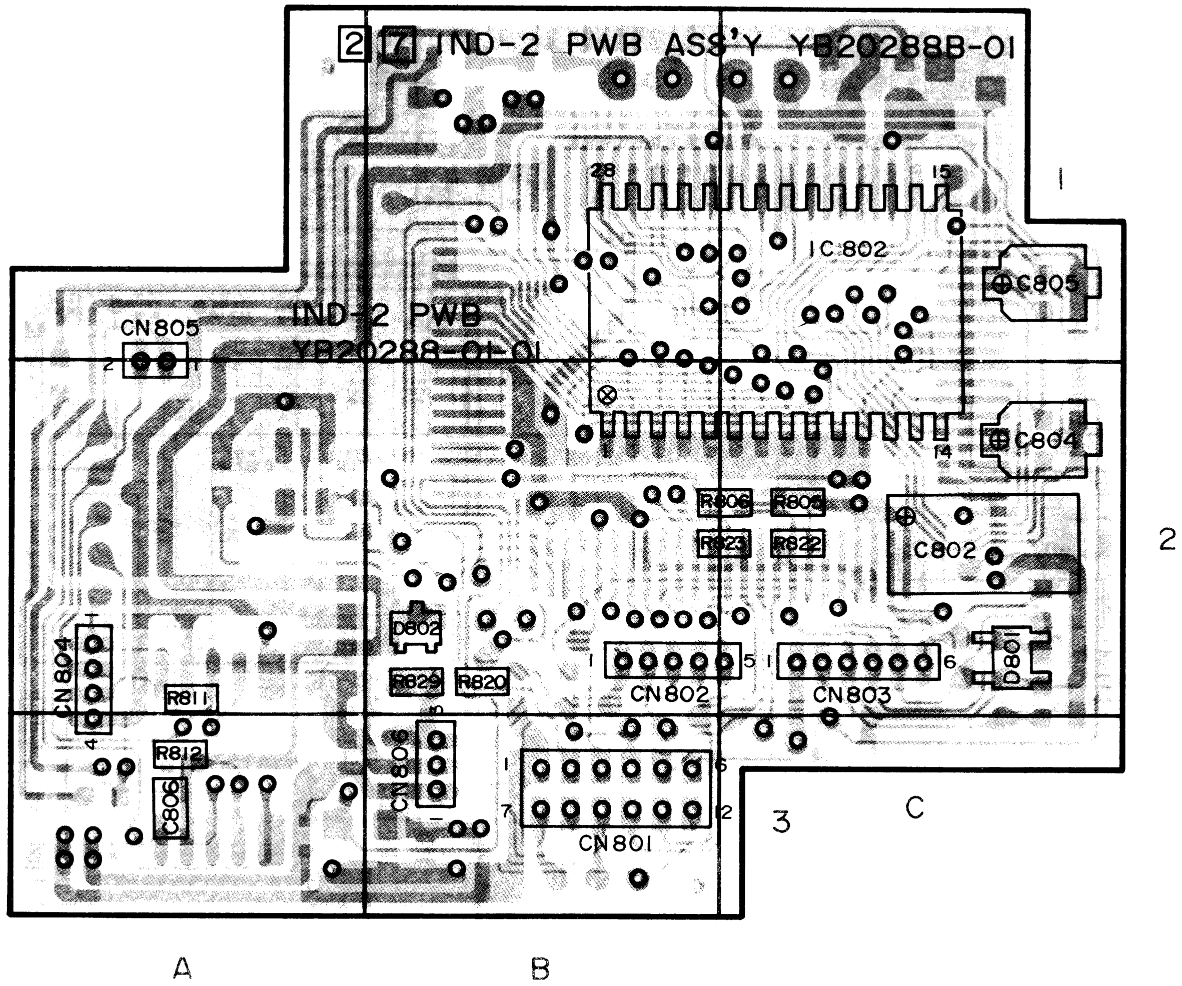
5.24 INDICATOR-2 CIRCUIT BOARD

— Rear —


R801
TITLE OSC
R801
R803
R804
R816
R815
Q801
D803
IC801
IND-2 PWB ASS'Y
YB20288B-01
IND-2 PWB
YB20288-01-01
CN805
R814
R824
R826
C807
R819
L801
L802
CN803
CN802
CN801
CN806
CN804
IC803
IC804
R813
R802
R821
1
2
3
A
B
C

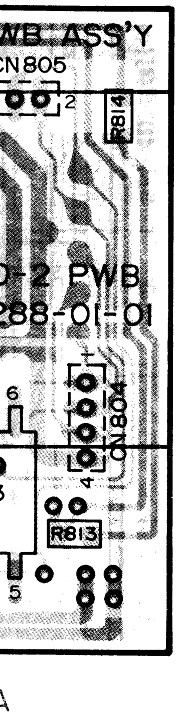
5.25

— Front —

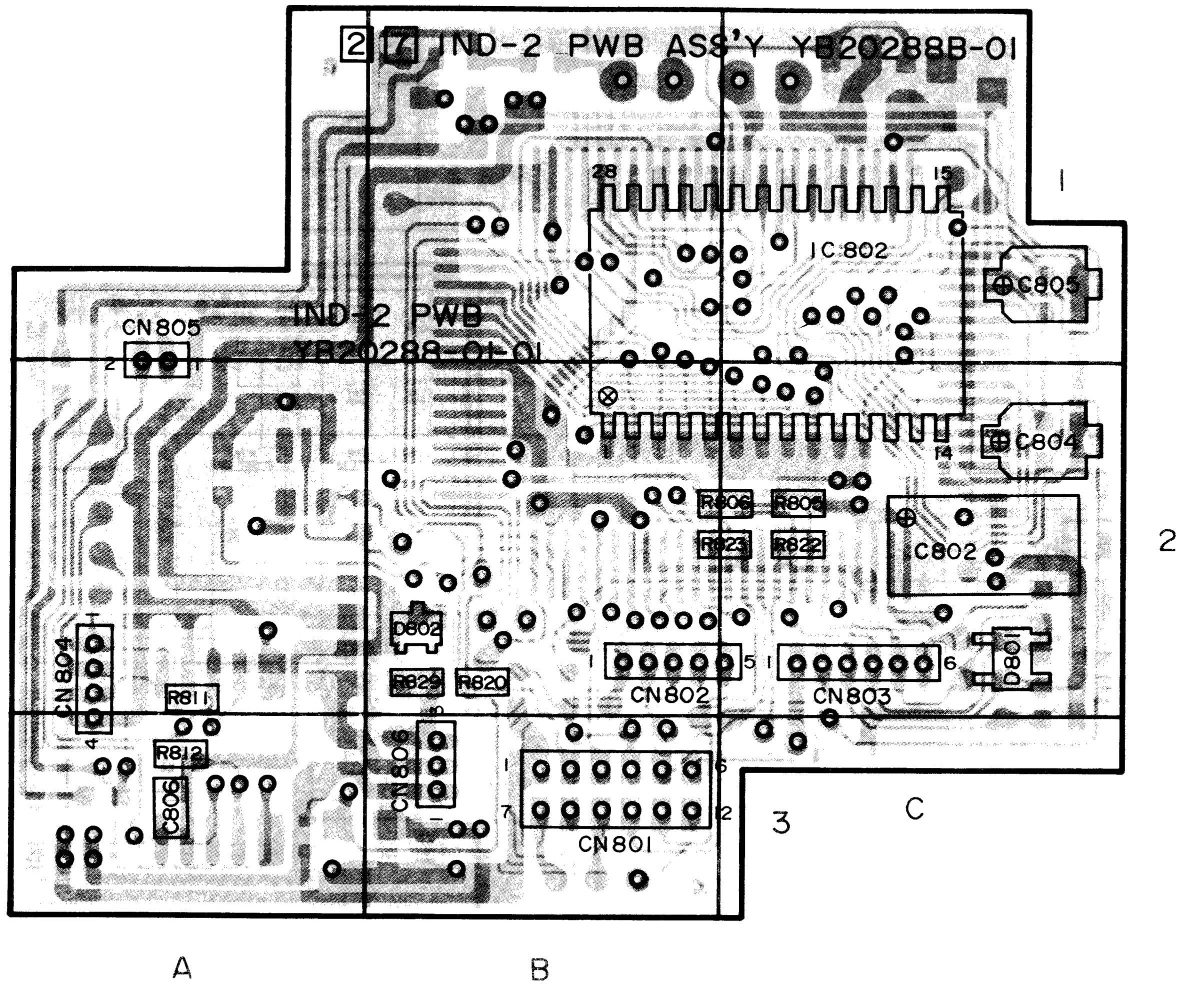

IND-2 PWB ASS'Y YB20288B-01
IND-2 PWB
YB20288-01-01
IC802
CN805
C805
C804
C802
R806
R805
R823
R822
D802
D801
R829
R820
R811
R812
C806
CN804
CN806
CN802
CN803
CN801
1
2
3
A
B
C

5.25 SWITCH CIRCUIT BOARD

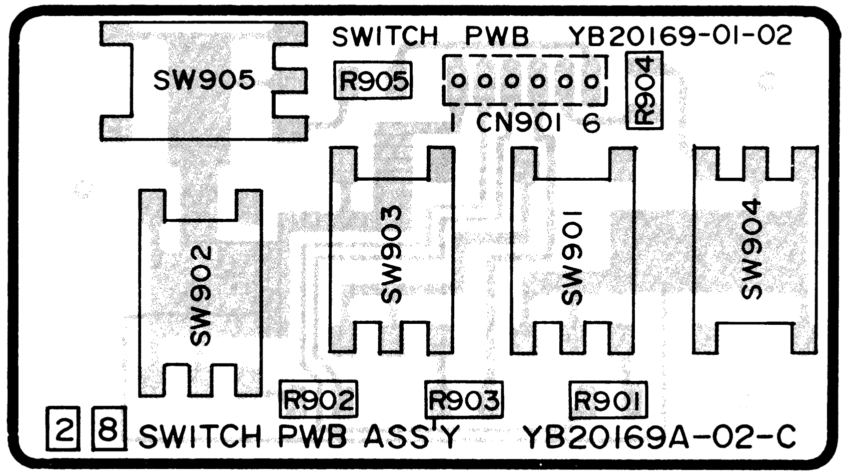
– Front –



WB ASS'Y
CN805
R814
D-2 PWB
288-01-01
CN804
R813
A



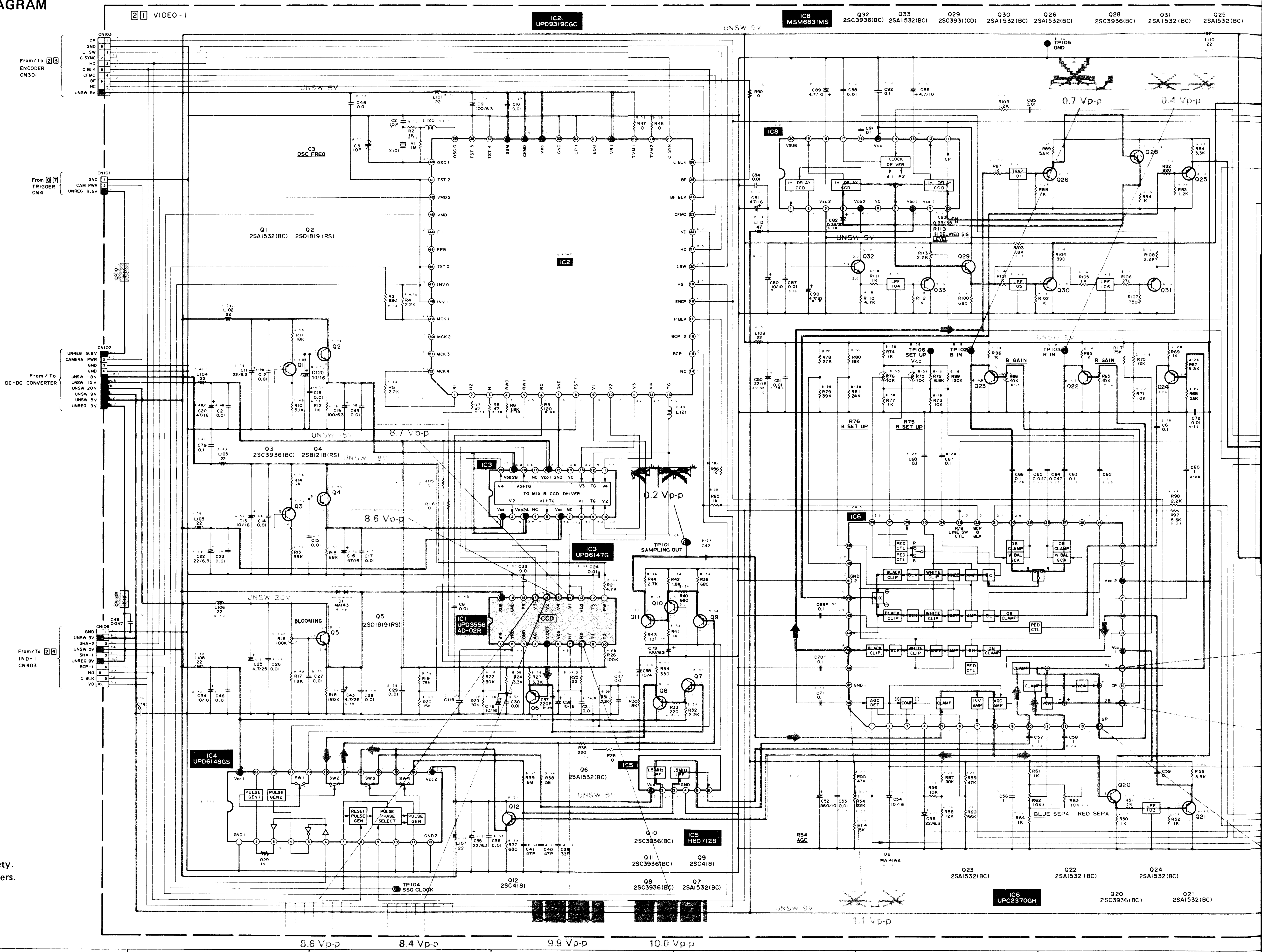
2 7 IND-2 PWB ASS'Y YB20288B-01
IND-2 PWB
YB20288-01-01
IC802
28
15
14
C805
C804
C802
CN805
CN804
R806
R805
R823
R822
D802
R829
R820
R811
R812
R813
C806
CN806
D801
CN802
CN803
CN801
1
2
3
A
B
C



SWITCH PWB YB20169-01-02
SW905
R905
CN901
R904
SW902
SW903
SW901
SW904
R902
R903
R901
2 8 SWITCH PWB ASS'Y YB20169A-02-C

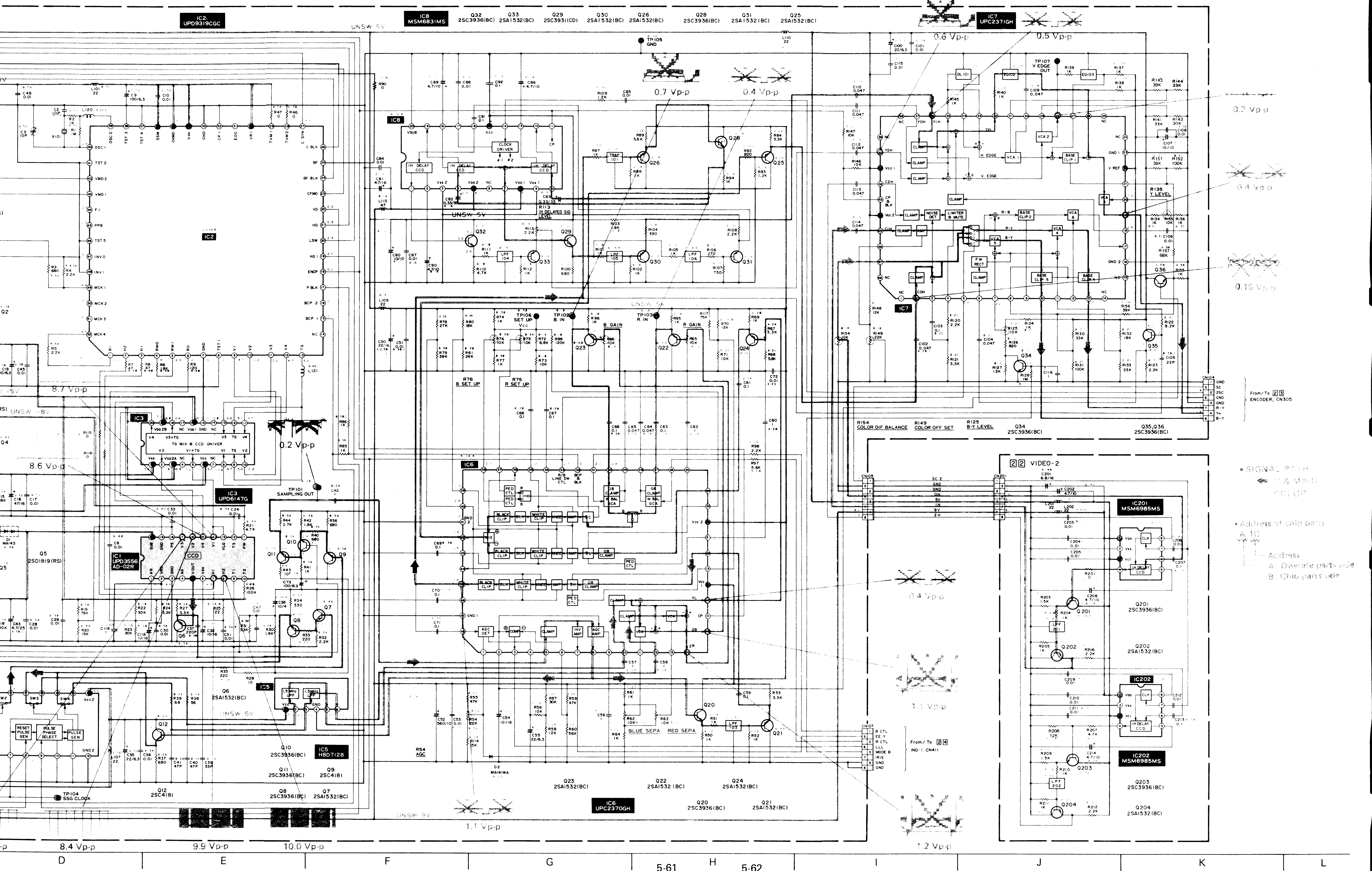
5.26 VIDEO SCHEMATIC DIAGRAM

●Voltage/ Waveform : Measured as the grey scale pattern which lighted up brightly is shot in the Rehersal mode.


2 1 VIDEO-1
IC2 UPD9319CGC
IC8 MSM6831MS
Q32 2SC3936(BC)
Q33 2SA1532(BC)
Q29 2SC3931(CD)
Q30 2SA1532(BC)
Q26 2SA1532(BC)
Q28 2SC3936(BC)
Q31 2SA1532(BC)
Q25 2SA1532(BC)
From/To 2 5 ENCODER CN301
CN103
From 3 7 TRIGGER CN4
CN101
From/To DC-DC CONVERTER
CN102
From/To 2 4 IND-1 CN403
CN106
UNSW 5V
UNSW 8V
UNSW 20V
C3 OSC FREQ
Q1 2SA1532(BC)
Q2 2SD1819(RS)
Q3 2SC3936(BC)
Q4 2SB1218(RS)
Q5 2SD1819(RS)
BLOOMING
D1 MA143
IC3 UPD6147G
TG MIX & CCD DRIVER
IC1 UPD3556 AD-02R
CCD
TP101 SAMPLING OUT
IC4 UPD6148GS
PULSE GEN1
PULSE GEN2
RESET PULSE GEN
PULSE PHASE SELECT
PULSE GEN
SW1
SW2
SW3
SW4
TP104 SSG CLOCK
IC5 H8D7128
1.5MHz LPF
Q6 2SA1532(BC)
Q10 2SC3936(BC)
Q11 2SC3936(BC)
Q9 2SC4181
Q12 2SC4181
Q8 2SC3936(BC)
Q7 2SA1532(BC)
IH DELAY CCD
CLOCK DRIVER
R113 IH DELAYED SIG LEVEL
TP105 GND
TP106 SET UP
TP102 B IN
TP103 R IN
B GAIN
R GAIN
R76 B SET UP
R75 R SET UP
IC6 UPC2370GH
BLACK CLIP
WHITE CLIP
OB CLAMP
W BAL GCA
PED CTL
AGC DET
AGC AMP
INV AMP
CLAMP
VCA
R54 AGC
D2 MA141WA
BLUE SEPA
RED SEPA
Q23 2SA1532(BC)
Q22 2SA1532 (BC)
Q24 2SA1532(BC)
Q20 2SC3936(BC)
Q21 2SA1532(BC)
0.7 Vp-p
0.4 Vp-p
8.7 Vp-p
8.6 Vp-p
0.2 Vp-p
1.1 Vp-p
8.6 Vp-p
8.4 Vp-p
9.9 Vp-p
10.0 Vp-p
A
B
C
D
E
F
G
H
1
2
3
4
5
6

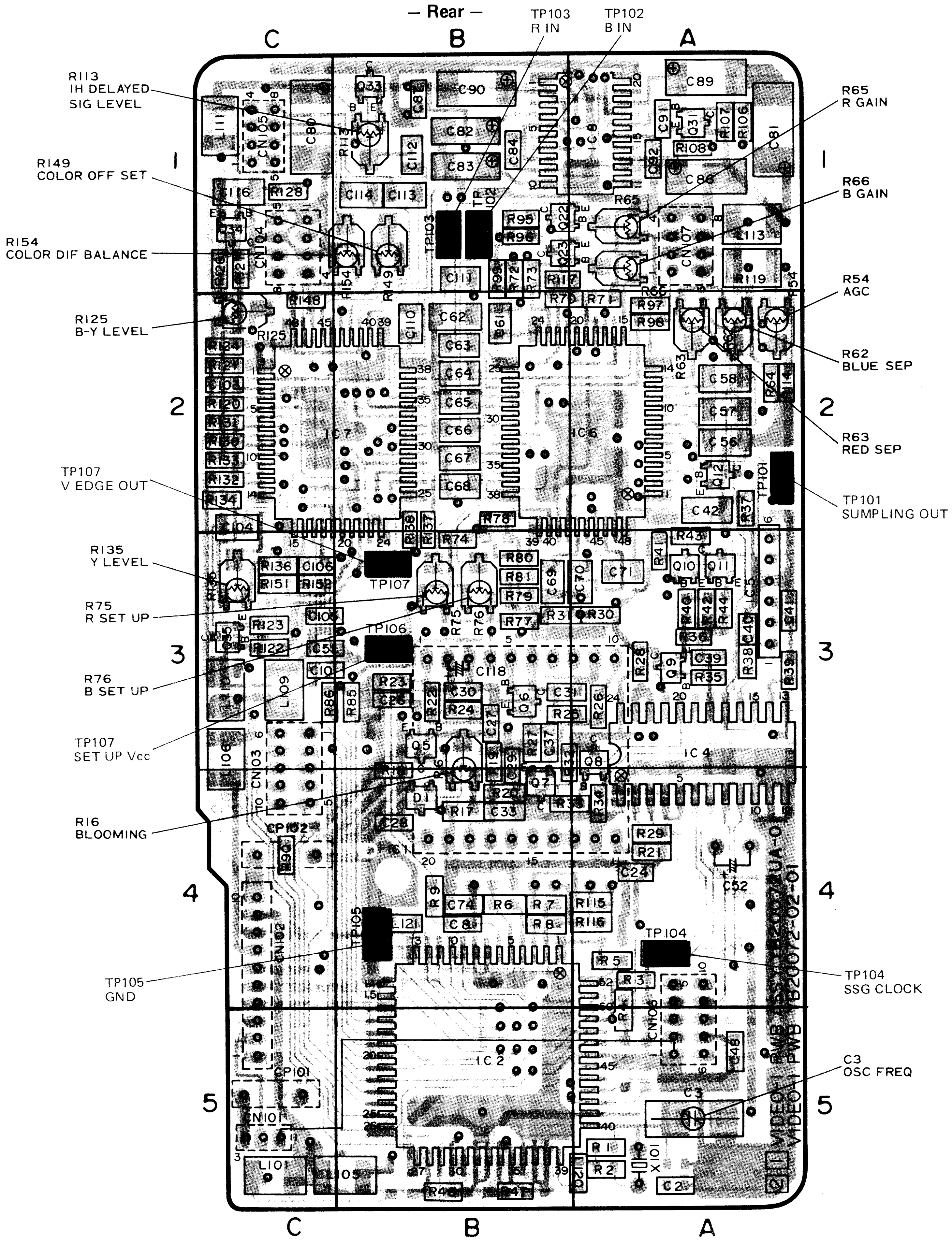
● Shaded (▨) parts are critical for safety.
Replace only with specified part numbers.

●Voltage/ Waveform : Measured as the grey scale pattern which lighted up brightly is shot in the Rehersal mode.

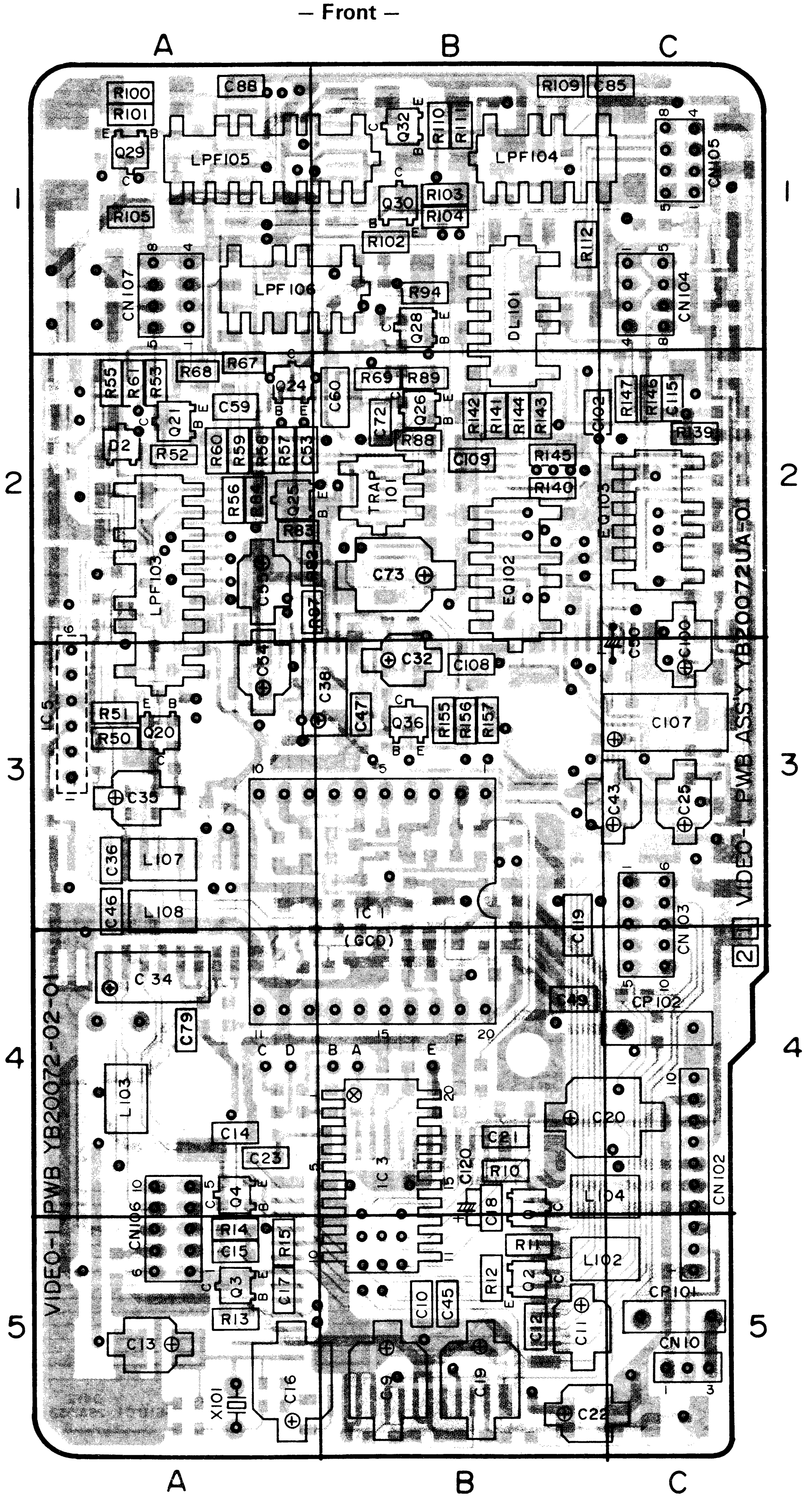

IC2 UPD9319CGC
IC8 MSM6831MS
Q32 2SC3936(BC)
Q33 2SA1532(BC)
Q29 2SC3931(CD)
Q30 2SA1532(BC)
Q26 2SA1532(BC)
Q28 2SC3936(BC)
Q31 2SA1532(BC)
Q25 2SA1532(BC)
IC7 UPC2371GH
UNSW 5V
TP105 GND
0.6 Vp-p
0.5 Vp-p
0.7 Vp-p
0.4 Vp-p
0.2 Vp-p
0.4 Vp-p
0.15 Vp-p
TP107 V EDGE OUT
CLOCK DRIVER
1H DELAY CCD
R113 1H DELAYED SIG LEVEL
TP106 SET UP
TP102 B. IN
TP103 R. IN
B GAIN
R GAIN
R76 B SET UP
R75 R SET UP
R135 Y LEVEL
R154 COLOR DIF BALANCE
R149 COLOR OFF SET
R125 B-Y LEVEL
Q34 2SC3936(BC)
Q35,Q36 2SC3936(BC)
CN104
From/To 23 ENCODER, CN305
8.7 Vp-p
8.6 Vp-p
IC3 UPD6147G
TG MIX & CCD DRIVER
TP101 SAMPLING OUT
IC1 UPD3556 AD-02R
CCD
Q5 2SD1819(RS)
IC6
IC5 HD7128
Q6 2SA1532(BC)
Q10 2SC3936(BC)
Q11 2SC3936(BC)
Q8 2SC3936(BC)
Q9 2SC4181
Q7 2SA1532(BC)
Q12 2SC4181
TP104 SSG CLOCK
RESET PULSE GEN
PULSE PHASE SELECT
PULSE GEN
R54 AGC
D2 MA141WA
BLUE SEPA
RED SEPA
Q23 2SA1532(BC)
Q22 2SA1532(BC)
Q24 2SA1532(BC)
Q20 2SC3936(BC)
Q21 2SA1532(BC)
IC6 UPC2370GH
UNSW 9V
CN105
CN201
22 VIDEO-2
IC201 MSM6985MS
IC202 MSM6985MS
Q201 2SC3936(BC)
Q202 2SA1532(BC)
Q203 2SC3936(BC)
Q204 2SA1532(BC)
CN107
From/To 24 IND-1, CN411
0.4 Vp-p
1.1 Vp-p
1.1 Vp-p
1.2 Vp-p
8.4 Vp-p
9.9 Vp-p
10.0 Vp-p
• SIGNAL PATH
Y & MAIN
COLOR
• Address of chip parts
A 10
Address
A: Discrete parts side
B: Chip parts side
D
E
F
G
H
I
J
K
L

6
5
4
3
2
1

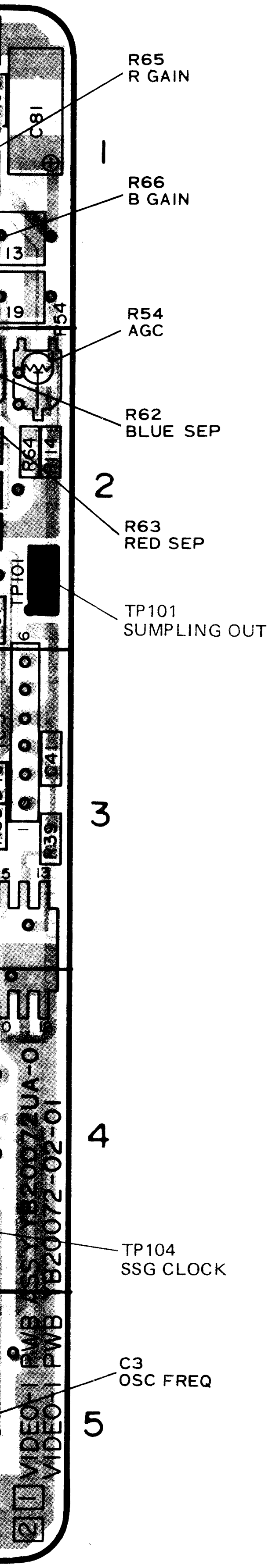
5.27 VIDEO-1 CIRCUIT BOARD

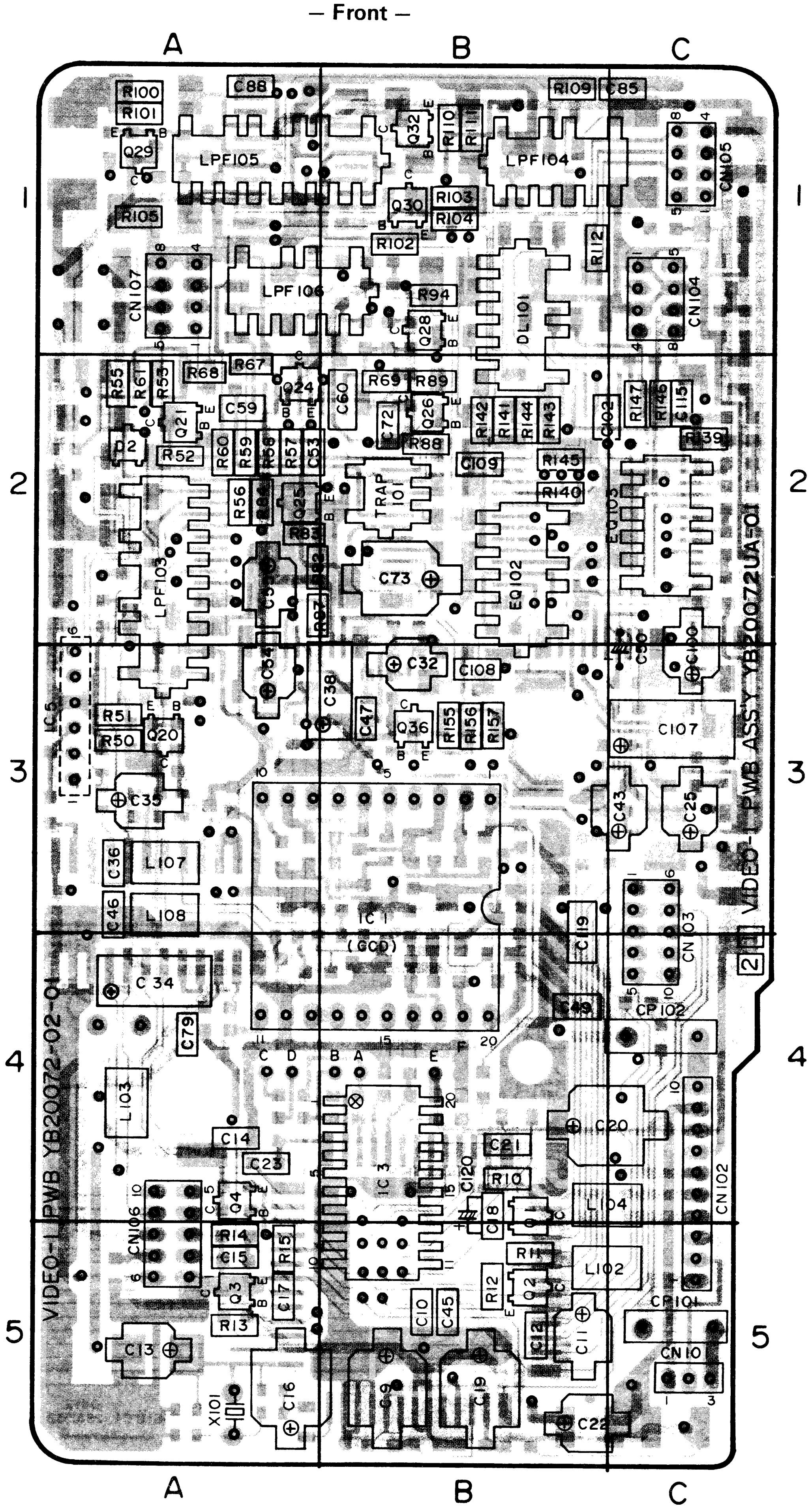

— Rear —
C B A
TP103 R IN
TP102 B IN
R113 IH DELAYED SIG LEVEL
R149 COLOR OFF SET
R154 COLOR DIF BALANCE
R125 B-Y LEVEL
TP107 V EDGE OUT
R135 Y LEVEL
R75 R SET UP
R76 B SET UP
TP107 SET UP Vcc
R16 BLOOMING
TP105 GND
R65 R GAIN
R66 B GAIN
R54 AGC
R62 BLUE SEP
R63 RED SEP
TP101 SUMPLING OUT
TP104 SSG CLOCK
C3 OSC FREQ
1 2 3 4 5
IC7
IC6
IC4
IC2
IC8
TP106
VIDEO-1 PWB YB20072UA-01
VIDEO-1 PWB YB20072-02-01
C B A

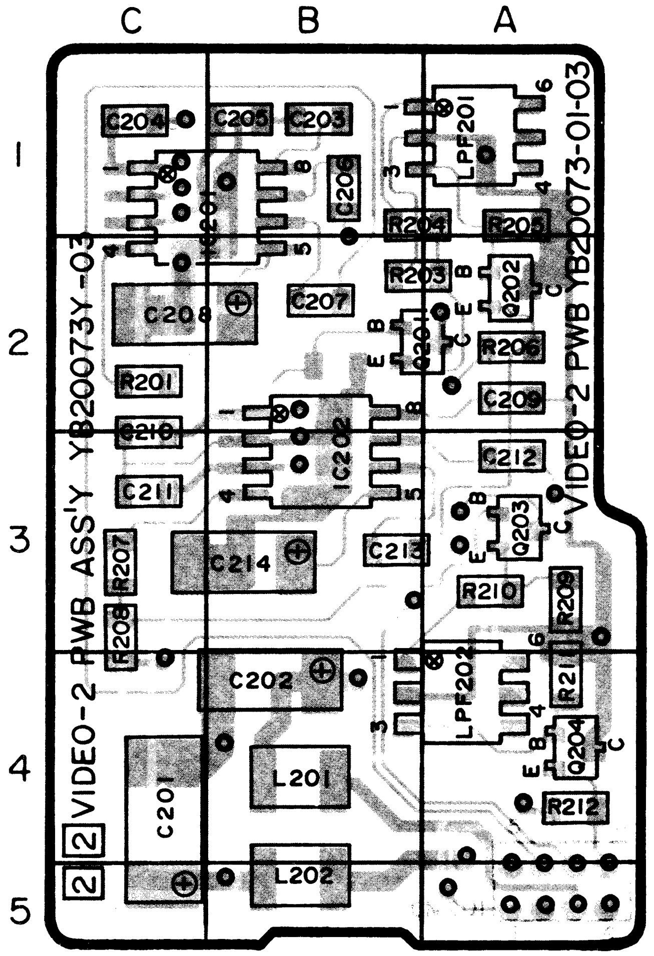
5.28 VID


— Front —
A B C
1 2 3 4 5
LPF105
LPF104
LPF106
LPF103
DL101
TRAP 101
EQ102
EQ103
IC1 (CCD)
IC3
IC5
CN107
CN104
CN105
CN103
CN102
CN106
CN101
CP102
CP101
VIDEO-1 PWB ASSY YB20072UA-01
VIDEO-1 PWB YB20072-02-01
A B C

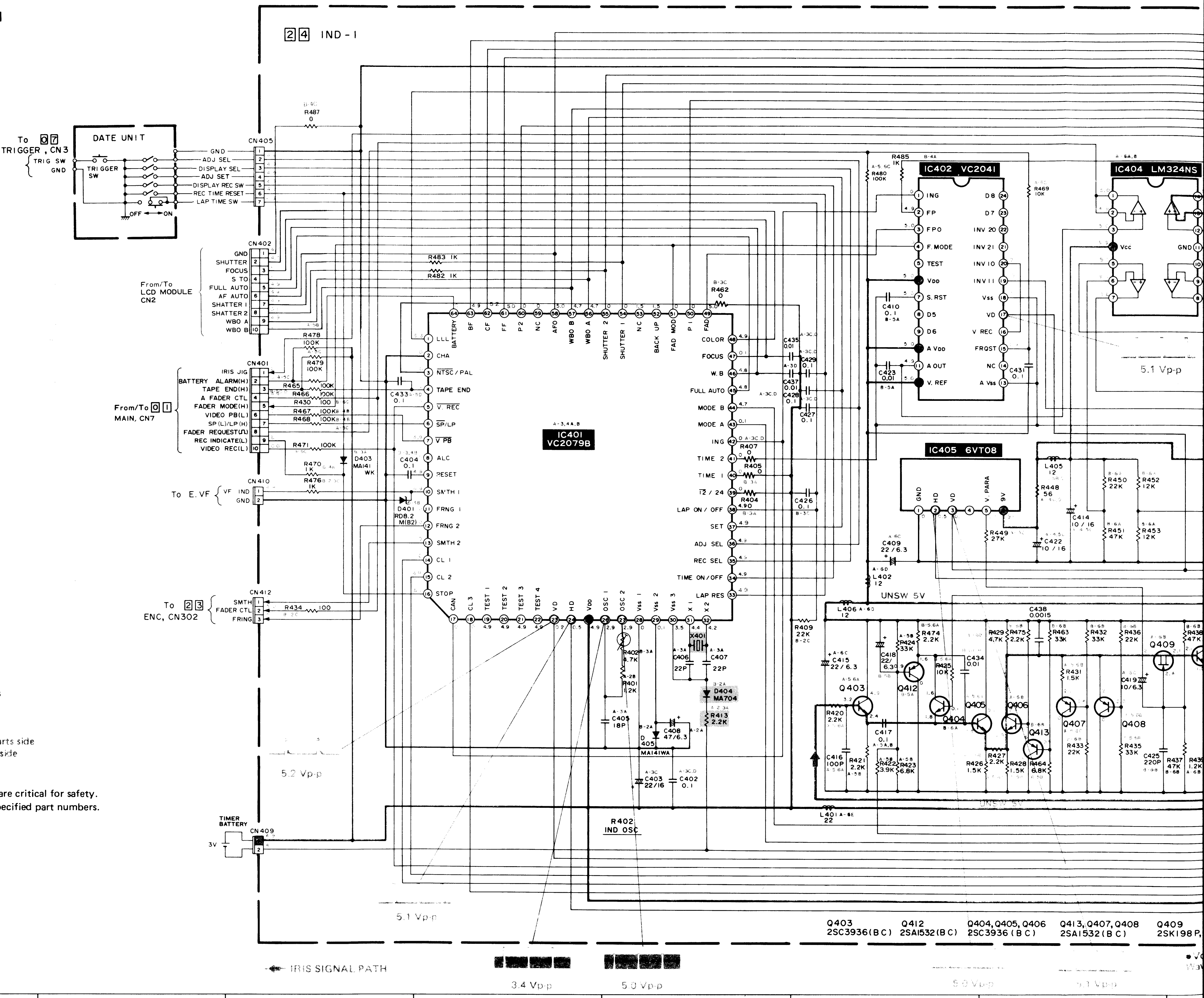
5.28 VIDEO-2 CIRCUIT BOARD


R65
R GAIN
R66
B GAIN
R54
AGC
R62
BLUE SEP
R63
RED SEP
TP101
SUMPLING OUT
TP104
SSG CLOCK
C3
OSC FREQ
1
2
3
4
5
VIDEO-1 PWB YB20072-02-01
VIDEO-1 PWB YB20072UA-01


— Front —
A
B
C
1
2
3
4
5
LPF105
LPF104
LPF106
LPF103
CN107
CN105
CN104
CN103
CN102
CN106
CN10
CP101
CP102
DL101
EQ102
EQ103
TRAP 101
IC1 (GCD)
IC3
IC5
L102
L103
L104
L107
L108
C73
C107
C34
C20
X101
VIDEO-1 PWB ASS'Y YB20072UA-01
VIDEO-1 PWB YB20072-02-01


C
B
A
1
2
3
4
5
IC201
IC202
LPF201
LPF202
Q201
Q202
Q203
Q204
C201
C202
C203
C204
C205
C206
C207
C208
C209
C210
C211
C212
C213
C214
R201
R202
R203
R204
R205
R206
R207
R208
R209
R210
R211
R212
L201
L202
VIDEO-2 PWB ASS'Y YB20073Y-03
VIDEO-2 PWB YB20073-01-03

5.29 INDICATOR-1 SCHEMATIC DIAGRAM


24 IND-I
DATE UNIT
To 07 TRIGGER, CN3
TRIG SW
GND
TRIGGER SW
OFF ← → ON
CN405
GND
ADJ SEL
DISPLAY SEL
ADJ SET
DISPLAY REC SW
REC TIME RESET
LAP TIME SW
R487 0
CN402
From/To LCD MODULE CN2
GND
SHUTTER
FOCUS
S TO
FULL AUTO
AF AUTO
SHATTER 1
SHATTER 2
WBO A
WBO B
CN401
From/To 01 MAIN, CN7
IRIS JIG
BATTERY ALARM(H)
TAPE END(H)
A FADER CTL
FADER MODE(H)
VIDEO PB(L)
SP(L)/LP(H)
FADER REQUEST
REC INDICATE(L)
VIDEO REC(L)
CN410
To E.VF
VF IND
GND
CN412
To 23 ENC, CN302
SMTH
FADER CTL
FRING
TIMER BATTERY
CN409
3V
IC401 VC2079B
IC402 VC2041
IC404 LM324NS
IC405 6VT08
X401
D401 RD8.2 M(B2)
D403 MA141WK
D404 MA704
D405 MA141WA
R402 IND OSC
UNSW 5V
Q403 2SC3936(BC)
Q412 2SA1532(BC)
Q404, Q405, Q406 2SC3936(BC)
Q413, Q407, Q408 2SA1532(BC)
Q409 2SK198P
5.1 Vp-p
5.2 Vp-p
3.4 Vp-p
5.0 Vp-p
IRIS SIGNAL PATH

• Address of chip parts

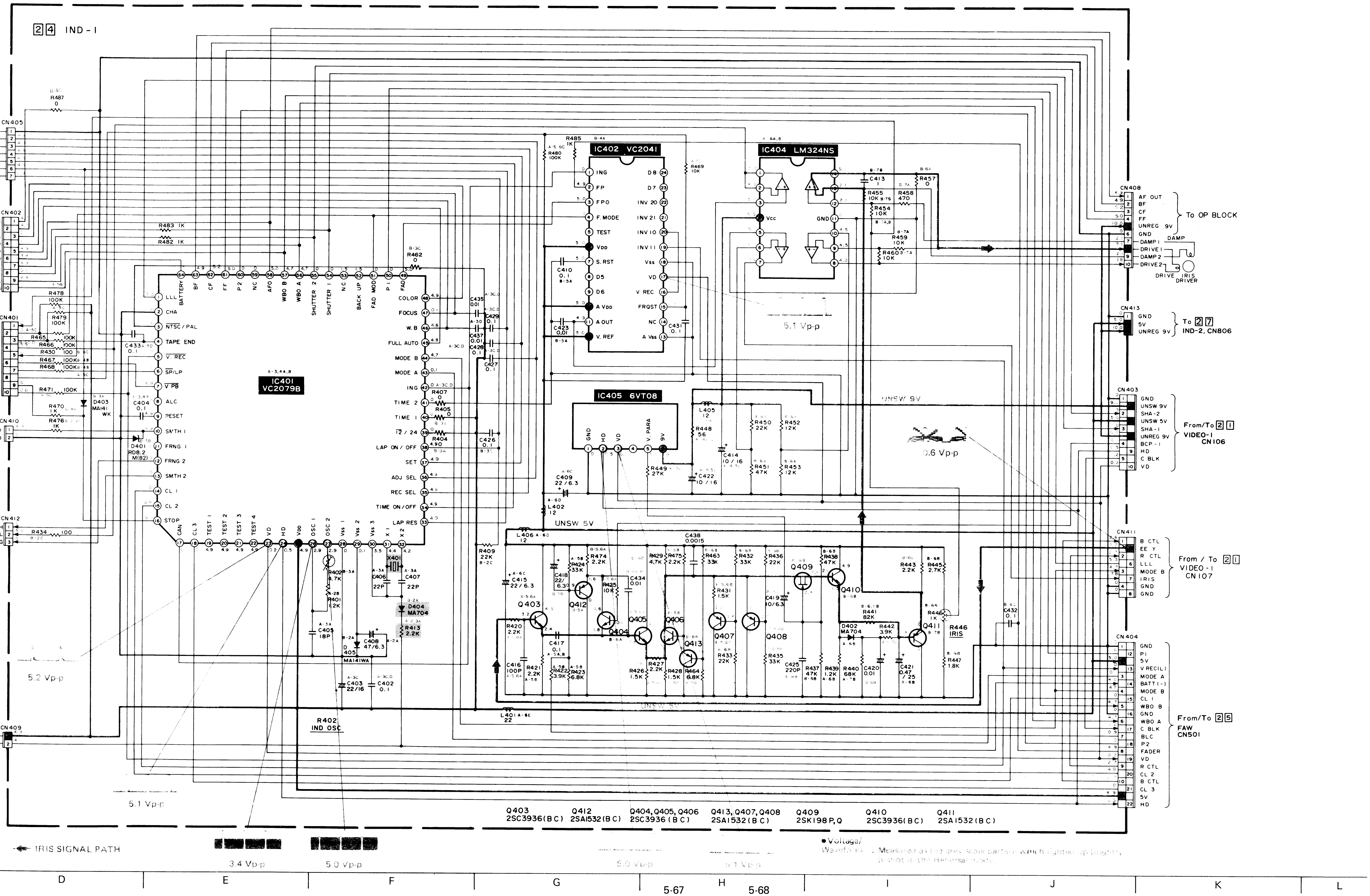
A-3C

Address

A: Diserete parts side

B: Chip parts side

• Shaded (▨) parts are critical for safety. Replace only with specified part numbers.


24 IND-1
CN405
CN402
CN401
CN410
CN412
CN409
R487 0
R483 1K
R482 1K
R478 100K
R479 100K
R465 100K
R466 100K
R430 100
R467 100K
R468 100K
R471 100K
R470 1K
R476 1K
R434 100
D403 MA141WK
D401 RD8.2M(B2)
C433 0.1
C404 0.1
IC401 VC2079B
BATTERY
BF
CF
FF
P2
NC
AFO
WBO B
WBO A
SHUTTER 2
SHUTTER 1
NC
BACK UP
FAD MOD
P1
FAD
LLL
CHA
NTSC/PAL
TAPE END
V REC
SP/LP
V PB
ALC
RESET
SMTH 1
FRNG 1
FRNG 2
SMTH 2
CL 1
CL 2
STOP
CAN
CL 3
TEST 1
TEST 2
TEST 3
TEST 4
VD
HD
VDD
OSC 1
OSC 2
Vss 1
Vss 2
Vss 3
X1
X2
COLOR
FOCUS
W.B
FULL AUTO
MODE B
MODE A
ING
TIME 2
TIME 1
12/24
LAP ON/OFF
SET
ADJ SEL
REC SEL
TIME ON/OFF
LAP RES
R462 0
R407 0
R405 0
R404 4.90
C435 0.01
C429 0.1
C437 0.01
C428 0.1
C427 0.1
C426 0.1
R409 22K
R402 4.7K
R401 1.2K
X401
C406 22P
C407 22P
D404 MA704
R413 2.2K
C405 18P
D405 MA141WA
C408 47/6.3
C403 22/16
C402 0.1
R402 IND OSC
5.2 Vp-p
5.1 Vp-p
R485 1K
R480 100K
IC402 VC2041
ING
FP
FPO
F.MODE
TEST
VDD
S.RST
D5
D6
A VDD
A OUT
V.REF
D8
D7
INV 20
INV 21
INV 10
INV 11
Vss
VD
V REC
FRQST
NC
A Vss
R469 10K
C410 0.1
C423 0.01
C431 0.1
IC404 LM324NS
Vcc
GND
C413 1
R457 0
R455 10K
R458 470
R454 10K
R459 10K
R460 10K
5.1 Vp-p
IC405 6VT08
GND
HD
VD
V PARA
9V
L405 12
R448 56
R450 22K
R452 12K
C414 10/16
R451 47K
R453 12K
R449 27K
C422 10/16
C409 22/6.3
L402 12
UNSW 9V
0.6 Vp-p
UNSW 5V
L406 12
C438 0.0015
C415 22/6.3
Q403
R420 2.2K
C416 100P
R421 2.2K
C418 22/6.3
R424 33K
R474 2.2K
Q412
R425 10K
C434 0.01
Q404
Q405
Q406
Q413
C417 0.1
R422 3.9K
R423 6.8K
R429 4.7K
R475 2.2K
R426 1.5K
R427 2.2K
R428 1.5K
R464 6.8K
R463 33K
R431 1.5K
Q407
R433 22K
R432 33K
R436 22K
Q408
R435 33K
C419 10/63
Q409
C425 220P
R438 47K
Q410
R437 47K
R439 1.2K
R441 82K
D402 MA704
R440 68K
C420 0.01
R442 3.9K
C421 0.47/25
R443 2.2K
R445 2.7K
R444 1K
R446 IRIS
Q411
R447 1.8K
C432 0.1
L401 22
UNSW 5V
CN408
AF OUT
BF
CF
FF
UNREG 9V
GND
DAMP 1
DRIVE 1
DAMP 2
DRIVE 2
To OP BLOCK
DAMP
DRIVE
IRIS DRIVER
CN413
GND
5V
UNREG 9V
To 27 IND-2, CN806
CN403
GND
UNSW 9V
SHA-2
UNSW 5V
SHA-1
UNREG 9V
BCP-1
HD
C BLK
VD
From/To 21 VIDEO-1 CN106
CN411
B CTL
EE Y
R CTL
LLL
MODE B
IRIS
GND
GND
From / To 21 VIDEO-1 CN107
CN404
GND
P1
5V
V REC(L)
MODE A
BATT(-)
MODE B
CL 1
WBO B
GND
WBO A
C BLK
BLC
P2
FADER
VD
R CTL
CL 2
B CTL
CL 3
5V
HD
From/To 25 FAW CN501
Q403 2SC3936(BC)
Q412 2SA1532(BC)
Q404, Q405, Q406 2SC3936 (BC)
Q413, Q407, Q408 2SA1532(BC)
Q409 2SK198 P,Q
Q410 2SC3936(BC)
Q411 2SA1532(BC)
IRIS SIGNAL PATH
3.4 Vp-p
5.0 Vp-p
5.0 Vp-p
5.1 Vp-p
D
E
F
G
H
I
J
K
L

● Voltage/
Waveform : Measured as the grey scale pattern which lighted up brightly, is shot in the Reversal mode.

6

5

4

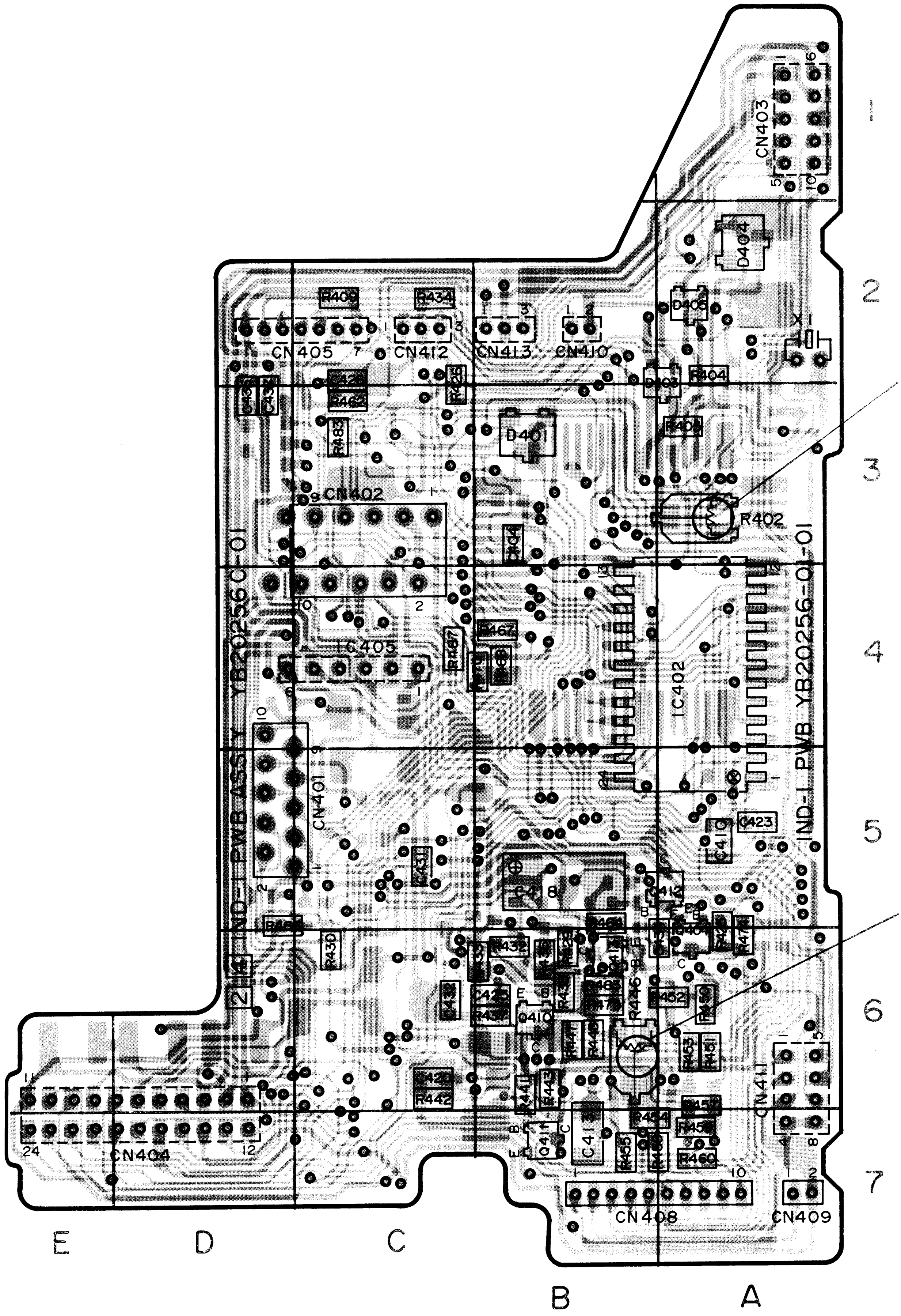
3

2

1

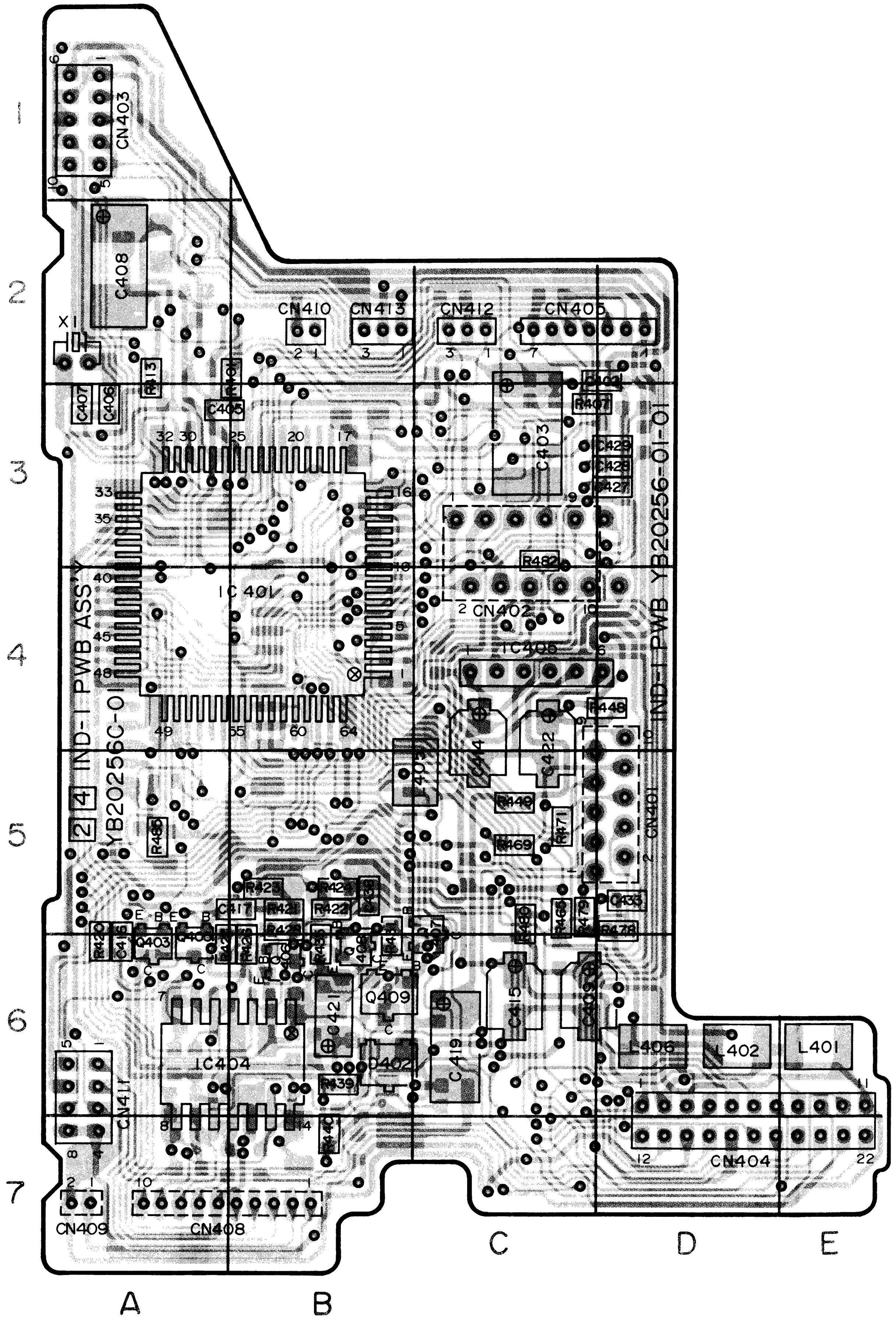
5.30 INDICATOR-1 CIRCUIT BOARD

– Rear –



CN403
D404
D405
X1
R409
R434
CN405
CN412
CN413
CN410
D403
R404
R402 IND OSC
R403
D401
CN402
R483
R462
C428
R425
R402
IC402
IC405
R467
R468
C404
CN401
IND-1 PWB ASSY YB20256C-01
IND-1 PWB YB20256-01-01
C423
C410
C418
C412
C431
R446 IRIS
R430
R432
R452
R459
C420
R442
R441
R443
Q411
Q410
C413
R454
R457
R458
R460
R453
R451
R455
CN411
CN404
CN408
CN409
1 2 3 4 5 6 7
E D C B A

– Front –

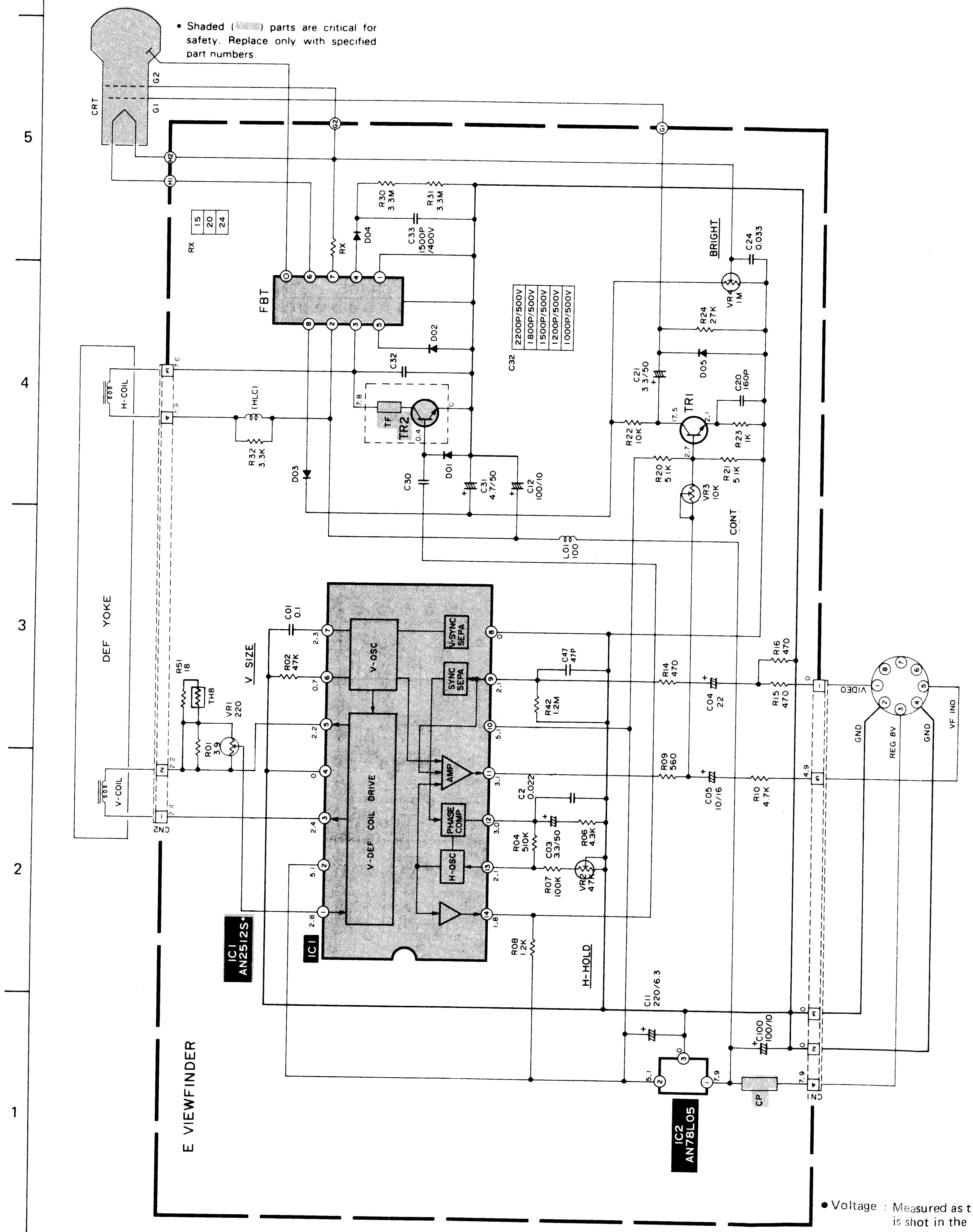


CN403
C408
X1
C407
C406
R413
R401
C405
CN410
CN413
CN412
CN405
C403
R407
C429
C428
C427
IC401
R482
CN402
IC405
C444
C422
R446
R440
R469
R471
CN401
IND-1 PWB ASSY YB20256C-01
IND-1 PWB YB20256-01-01
R486
Q403
Q404
C417
R423
R422
R421
C421
Q409
C415
C419
D402
R439
IC404
L403
L402
L401
C435
R478
CN411
CN404
CN409
CN408
1 2 3 4 5 6 7
A B C D E

A B C 5-69 5-70 E F G H

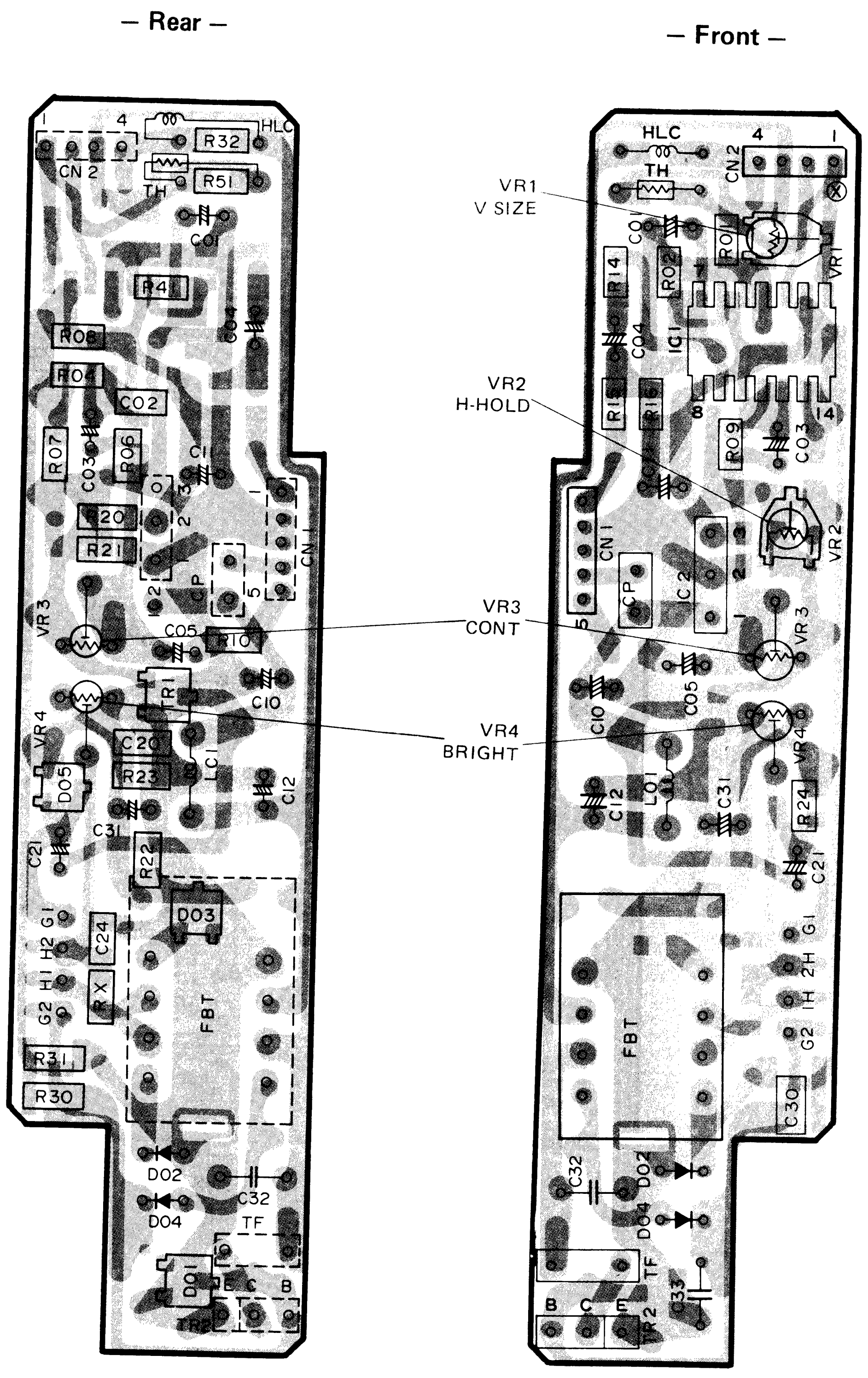
5.31 ELECTRONIC VIEWFINDER SCHEMATIC DIAGRAM

- Shaded ( ) parts are critical for safety. Replace only with specified part numbers.


CRT
G2
G1
H2
H1
FBT
RX
15
20
24
R30 3.3M
R31 3.3M
D04
C33 1500P /400V
C32
2200P/500V
1800P/500V
1500P/500V
1200P/500V
1000P/500V
D02
BRIGHT
C24 0.033
VR4 1M
R24 27K
D05
C21 3.3/50
C20 160P
TR1
R22 10K
R23 1K
R20 5.1K
R21 5.1K
VR3 10K
CONT
H-COIL
(HLC)
R32 3.3K
TF
TR2
D03
C30
D01
C31 4.7/50
C12 100/10
L01 100
DEF YOKE
V-COIL
CN2
R51 18
TH8
R01 3.9
VR1 220
V SIZE
R02 47K
C01 0.1
V-OSC
V-SYNC SEPA
SYNC SEPA
AMP
PHASE COMP
H-OSC
V-DEF COIL DRIVE
IC1
IC1 AN2512S
C47 47P
R42 1.2M
R14 470
C04 22
R16 470
R15 470
R09 560
C2 0.022
C05 10/16
R10 4.7K
R04 510K
C03 3.3/50
R06 4.3K
R07 100K
VR2 47K
R08 12K
H-HOLD
C11 220/6.3
C100 100/10
IC2 AN78L05
CP
E VIEWFINDER
VIDEO
GND
REG 8V
GND
VF IND

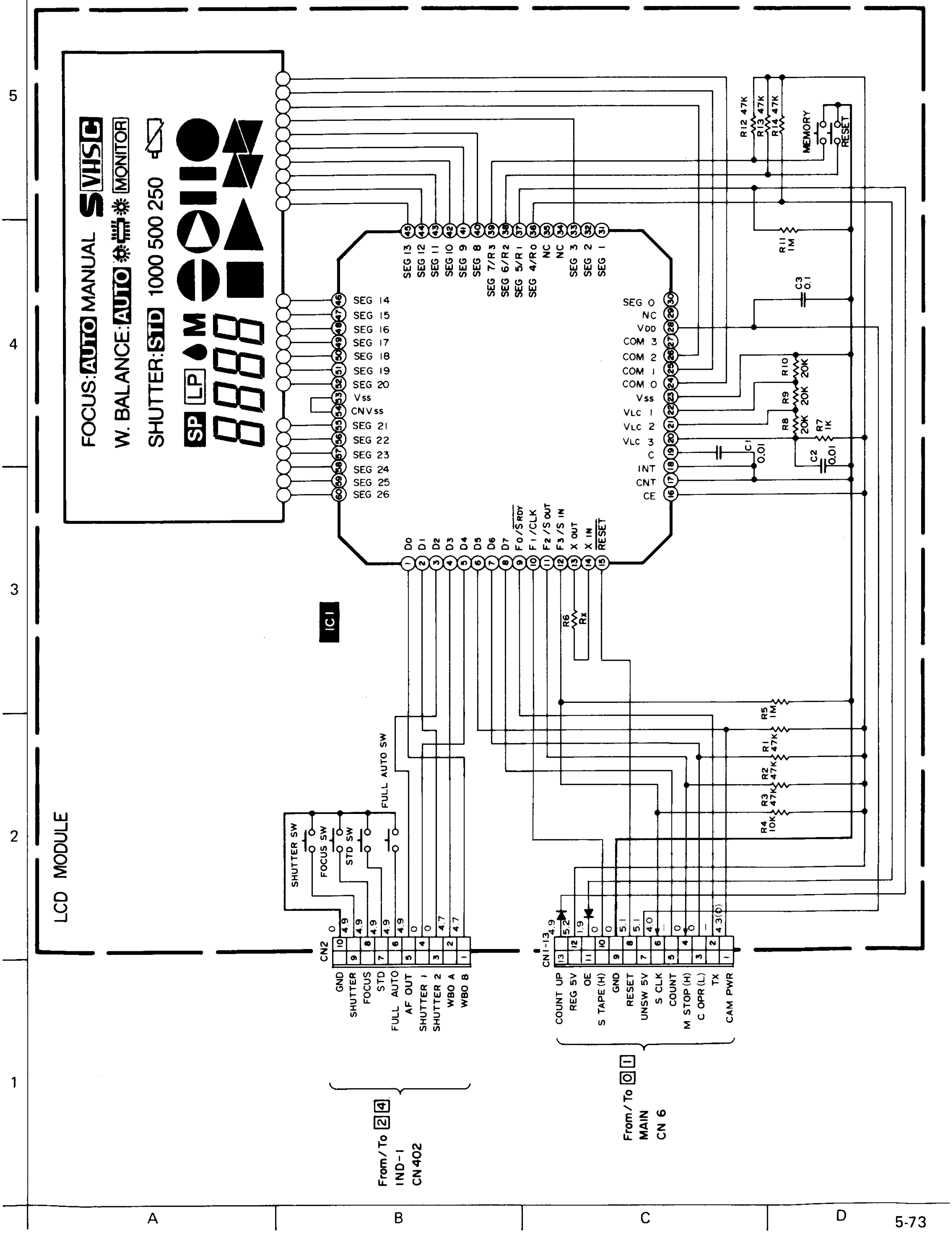
- Voltage : Measured as the grey scale pattern which lighted up brightly is shot in the Rehersal mode.

5.32 ELECTRONIC VIEWFINDER CIRCUIT BOARD


— Rear —
— Front —
VR1 V SIZE
VR2 H-HOLD
VR3 CONT
VR4 BRIGHT
CN 2
CN 1
HLC
TH
R32
R51
C01
R41
R08
R04
C02
R07
C03
R06
R20
R21
IC1
IC2
C05
R10
R11
C10
C20
R23
LC1
C12
D05
C31
C21
R22
D03
C24
RX
FBT
R31
R30
D02
D04
C32
TF
D01
TR2
B
C
E
R14
R02
R01
R15
R16
R09
C04
CP
L01
R24
C30
C33
G1
G2
H1
H2

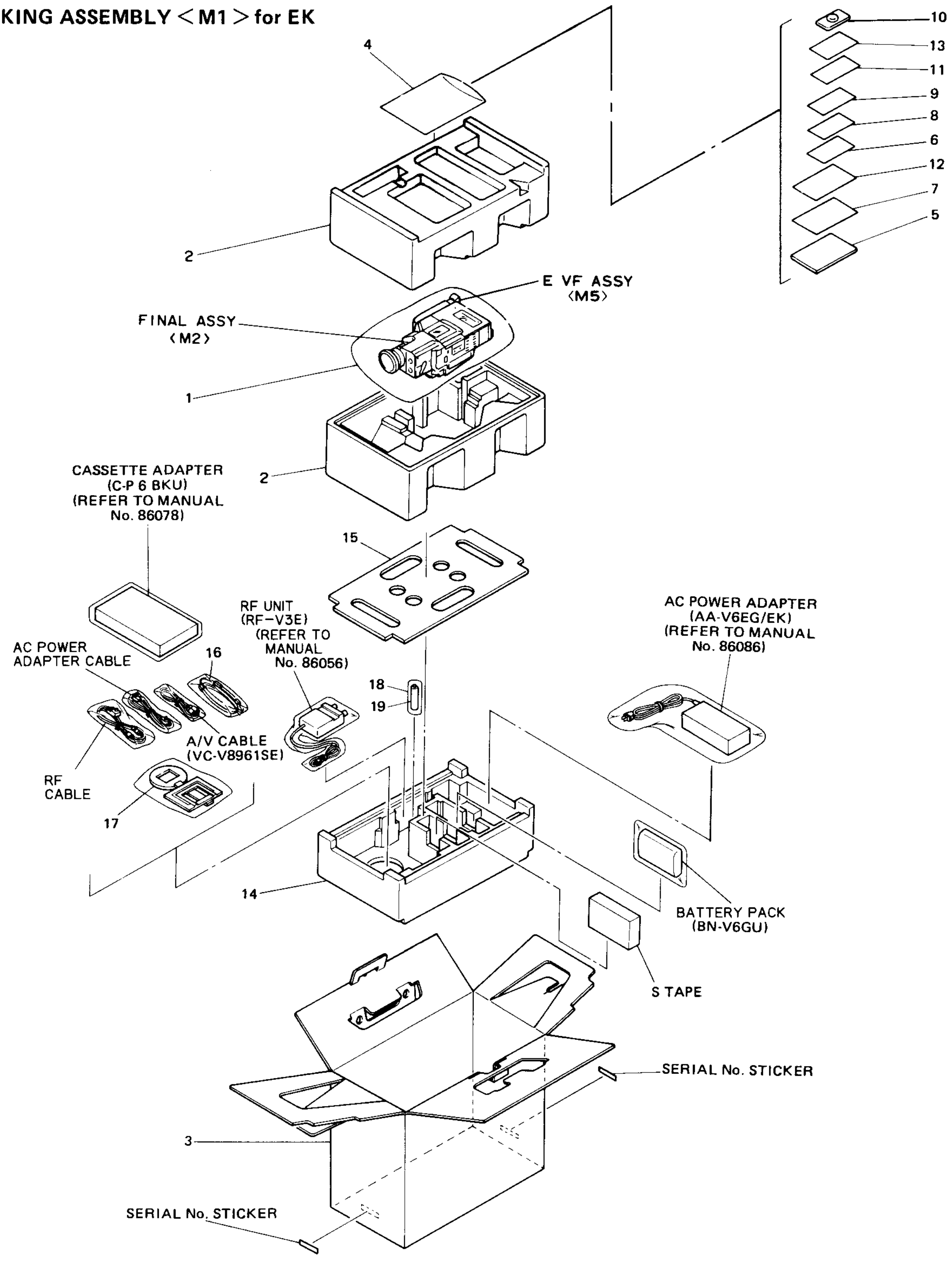
5.33 LCD MODULE SCHEMATIC DIAGRAM

Note:
This schematic diagram is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.



6
5
4
3
2
1
LCD MODULE
FOCUS: AUTO MANUAL
W. BALANCE: AUTO
SHUTTER: STD 1000 500 250
S VHS C
MONITOR
SP LP
8888
M
IC1
SEG 13
SEG 12
SEG 11
SEG 10
SEG 9
SEG 8
SEG 7/R3
SEG 6/R2
SEG 5/R1
SEG 4/R0
NC
NC
SEG 3
SEG 2
SEG 1
SEG 14
SEG 15
SEG 16
SEG 17
SEG 18
SEG 19
SEG 20
Vss
CNVss
SEG 21
SEG 22
SEG 23
SEG 24
SEG 25
SEG 26
SEG 0
NC
VDD
COM 3
COM 2
COM 1
COM 0
Vss
VLC 1
VLC 2
VLC 3
C
INT
CNT
CE
D0
D1
D2
D3
D4
D5
D6
D7
F0/S̄RDY
F1/CLK
F2/S OUT
F3/S IN
X OUT
X IN
RESET
R12 47K
R13 47K
R14 47K
MEMORY
RESET
R11 1M
C3 0.1
R10 20K
R9 20K
R8 20K
R7 1K
C1 0.01
C2 0.01
R6
Rx
R5 1M
R1 47K
R2 47K
R3 47K
R4 10K
SHUTTER SW
FOCUS SW
STD SW
FULL AUTO SW
CN2
10 GND 0
9 SHUTTER 4.9
8 FOCUS 4.9
7 STD 4.9
6 FULL AUTO 4.9
5 AF OUT 0
4 SHUTTER 1 0
3 SHUTTER 2 4.7
2 WBO A 4.7
1 WBO B
CN1-13
13 COUNT UP 4.9
12 REG 5V 5.2
11 OE 1.9
10 S TAPE (H) 0
9 GND 0
8 RESET 5.1
7 UNSW 5V 5.1
6 S CLK 4.0
5 COUNT –
4 M STOP (H) 0
3 C OPR (L) 0
2 TX –
1 CAM PWR 4.3(0)
From / To 24 IND-1 CN402
From / To 01 MAIN CN 6
A
B
C
D

6.3 PACKING ASSEMBLY < M1 > for EK

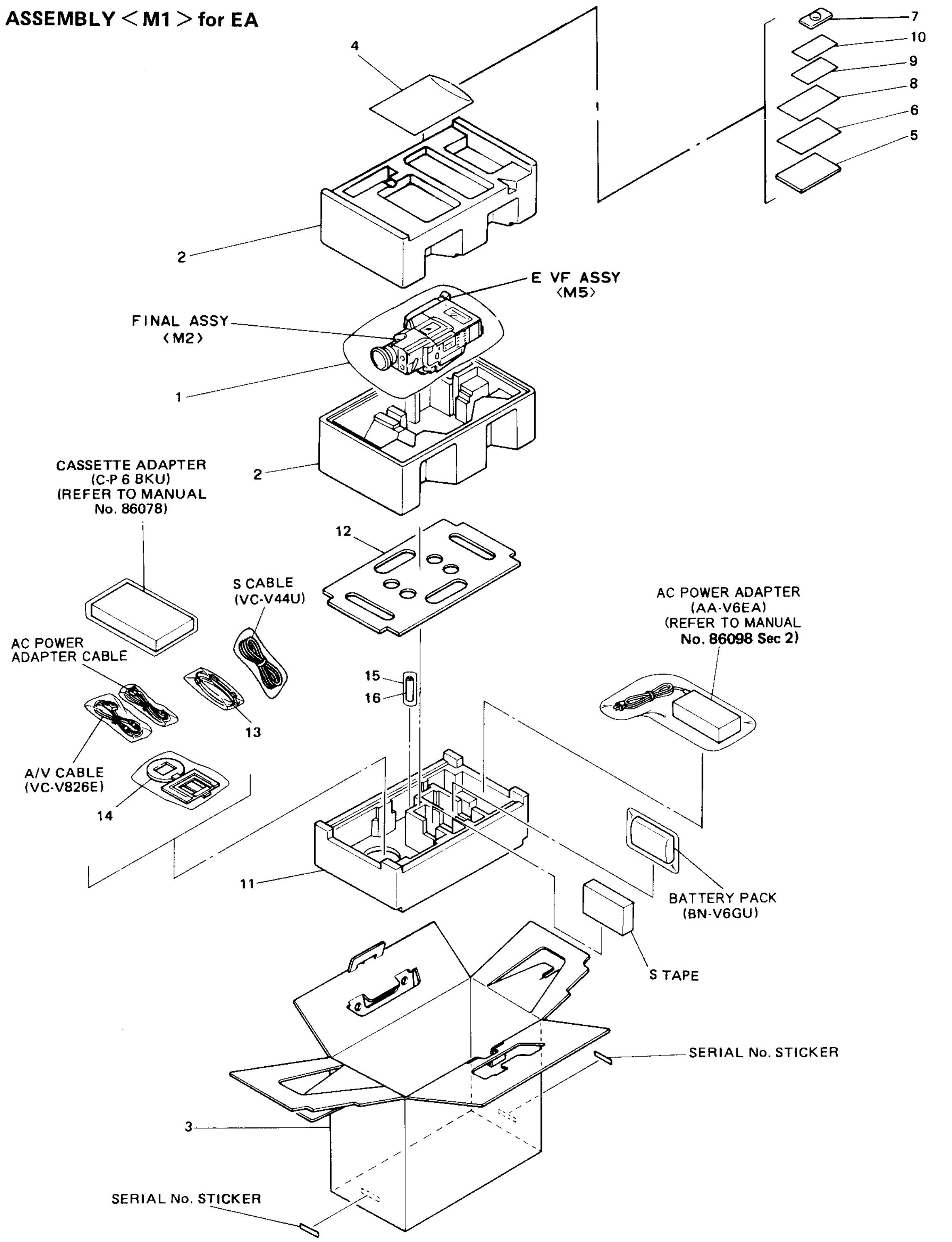

10
13
11
9
8
6
12
7
5
4
2
E VF ASSY ⟨M5⟩
FINAL ASSY ⟨M2⟩
1
CASSETTE ADAPTER (C-P 6 BKU) (REFER TO MANUAL No. 86078)
2
15
RF UNIT (RF−V3E) (REFER TO MANUAL No. 86056)
AC POWER ADAPTER (AA-V6EG/EK) (REFER TO MANUAL No. 86086)
AC POWER ADAPTER CABLE
16
18
19
A/V CABLE (VC-V8961SE)
RF CABLE
17
14
BATTERY PACK (BN-V6GU)
S TAPE
SERIAL No. STICKER
3
SERIAL No. STICKER

✱✱⁂✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱

1. PACKING ASSEMBLY ⟨M1⟩ GR-S70EK

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	1	YQM30021-11	POLY BAG
	2	YU30308A	CUSHION ASSY
	3	YQ30549-23	PACKING CASE
	4	PQM30023-5	POLY BAG
⚠	5	YU30052-134	INSTRUCTIONS
	6	BT-20066A	E. DISTRI. LIST
	7	TCN-3379	TAPE CATALOG
	8	YU30328	MOVIE CLUB GUIDE
	9	YU30328-2	POST CARD
⚠	10	YU40547	BATTERY
	11	YU40406-25	MARKET SHEET
	12	YU30217-2	TITLE CARD
	13	BT-20060	GUARANTY CARD
	14	YQ20227-1-3	ACCESSORY TRAY
	15	YQ41283	ACCESSORY TRAY SHEET
	16	YQ10188A-1	SHOULDER STRAP
	17	YU40856-2-2	TITLE HOLDER
	18	QPGA005-01005	POLY BAG
	19	UM-3DJ	BATTERY

6.4 PACKING ASSEMBLY < M1 > for EA


7
10
9
8
6
5
4
2
E VF ASSY ⟨M5⟩
FINAL ASSY ⟨M2⟩
1
CASSETTE ADAPTER (C-P 6 BKU) (REFER TO MANUAL No. 86078)
2
12
S CABLE (VC-V44U)
AC POWER ADAPTER (AA-V6EA) (REFER TO MANUAL No. 86098 Sec 2)
AC POWER ADAPTER CABLE
15
16
13
A/V CABLE (VC-V826E)
14
11
BATTERY PACK (BN-V6GU)
S TAPE
SERIAL No. STICKER
3
SERIAL No. STICKER

✱✱⁂✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱

1. PACKING ASSEMBLY ⟨M1⟩ GR-S70EA

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	1	YQM30021-11	POLY BAG
	2	YU30308A	CUSHION ASSY
	3	YQ30549-24	PACKING CASE
	4	QPGA025-03505	POLY BAG
⚠	5	YU30052-135	INSTRUCTIONS
	6	TCN-3379	TAPE CATALOG
⚠	7	YU40547	BATTERY
	8	YU30217-3	TITLE CARD
	9	BT-20080	WARRANTY CARD
	10	BT-20119	WARRANTY CARD
	11	YQ20227-1-3	ACCESSORY TRAY
	12	YQ41283	ACCESSORY TRAY SHEET
	13	YQ10188A-1	SHOULDER STRAP
	14	YU40856-2-2	TITLE HOLDER
	15	QPGA005-01005	POLY BAG
	16	UM-3DJ	BATTERY

SECTION 6
EXPLODED VIEWS AND PARTS LIST

SAFETY PRECAUTION

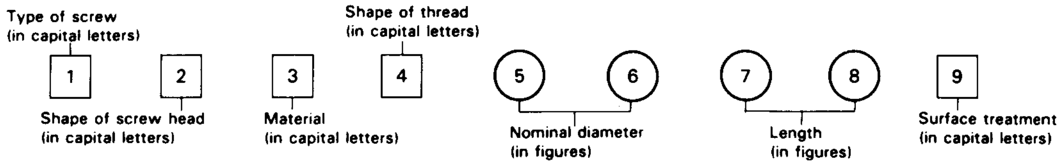
Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

NOTE: [M] indicates mechanical symbol number.

6.1 STANDARD PART NUMBER CODING

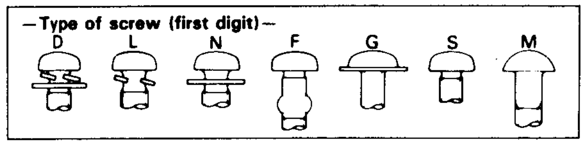
6.1.1 Screw coding

Standard screw part numbers are as follows.


Type of screw (in capital letters)
Shape of thread (in capital letters)
1
2
3
4
5
6
7
8
9
Shape of screw head (in capital letters)
Material (in capital letters)
Nominal diameter (in figures)
Length (in figures)
Surface treatment (in capital letters)

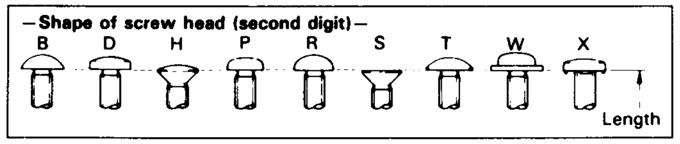
Type of screw (first digit)

S	Normal screws
D	Assembled machine screws (with plain and spring washers)
L	〃 (with spring washer)
N	〃 (with plain washer)
F	Feather screws
G	Washer head tapping screws
M	Wood screws


—Type of screw (first digit)—
D
L
N
F
G
S
M

Shape of screw head (second digit)

B	Brazier head
D	Binding head
H	Oval countersunk head
P	Pan head
R	Round head
S	Flat head
T	Truss head
W	Washer head (machine screws)
X	Toothed head

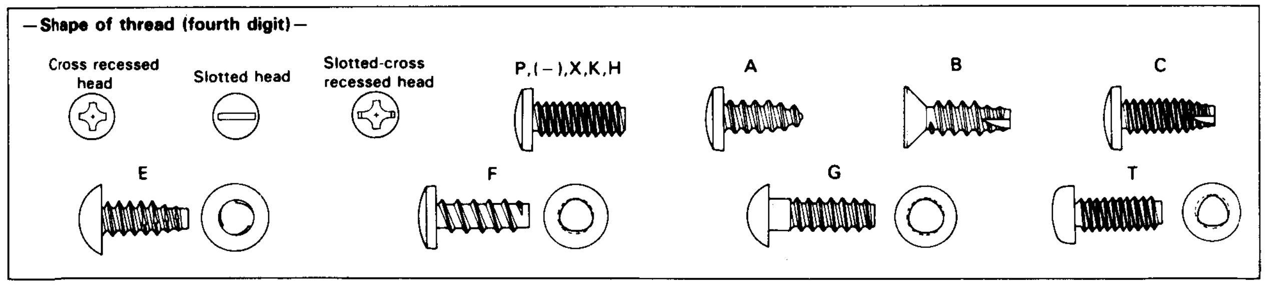

—Shape of screw head (second digit)—
B
D
H
P
R
S
T
W
X
Length

Material (third digit)

S	Steel
E	Stainless steel
C	Cast iron
U	Copper
B	Brass
P	Phosphor bronze
N	Nickel silver
Y	Cast brass
A	Aluminum
Z	Zinc alloy
K	Polycarbonate

Shape of thread (fourth digit)

P	Cross recessed head screws	
(–)	Slotted head machine screws	
X	Slotted-cross recessed head machine screws	
K	Cross recessed head machine screws for precision equipment	(type 1)
H	〃	(type 3)
A	Cross recessed head tapping screws	(type 1)
B	〃	(type 2)
C	〃	(type 3)
E	Cross recessed head special tapping screws	(brand : evertight)
F	〃	(brand : P-tight)
T	〃	(brand : taptight)
G	〃	


—Shape of thread (fourth digit)—
Cross recessed head
Slotted head
Slotted-cross recessed head
P,(–),X,K,H
A
B
C
E
F
G
T

Nominal diameter (fifth and sixth digits)

The fifth and sixth digits indicate a nominal diameter or dimension. If the dimension exceeds 10 mm, three digits are used. The number indicates a nominal diameter or dimension, given in millimeters, multiplied by ten.

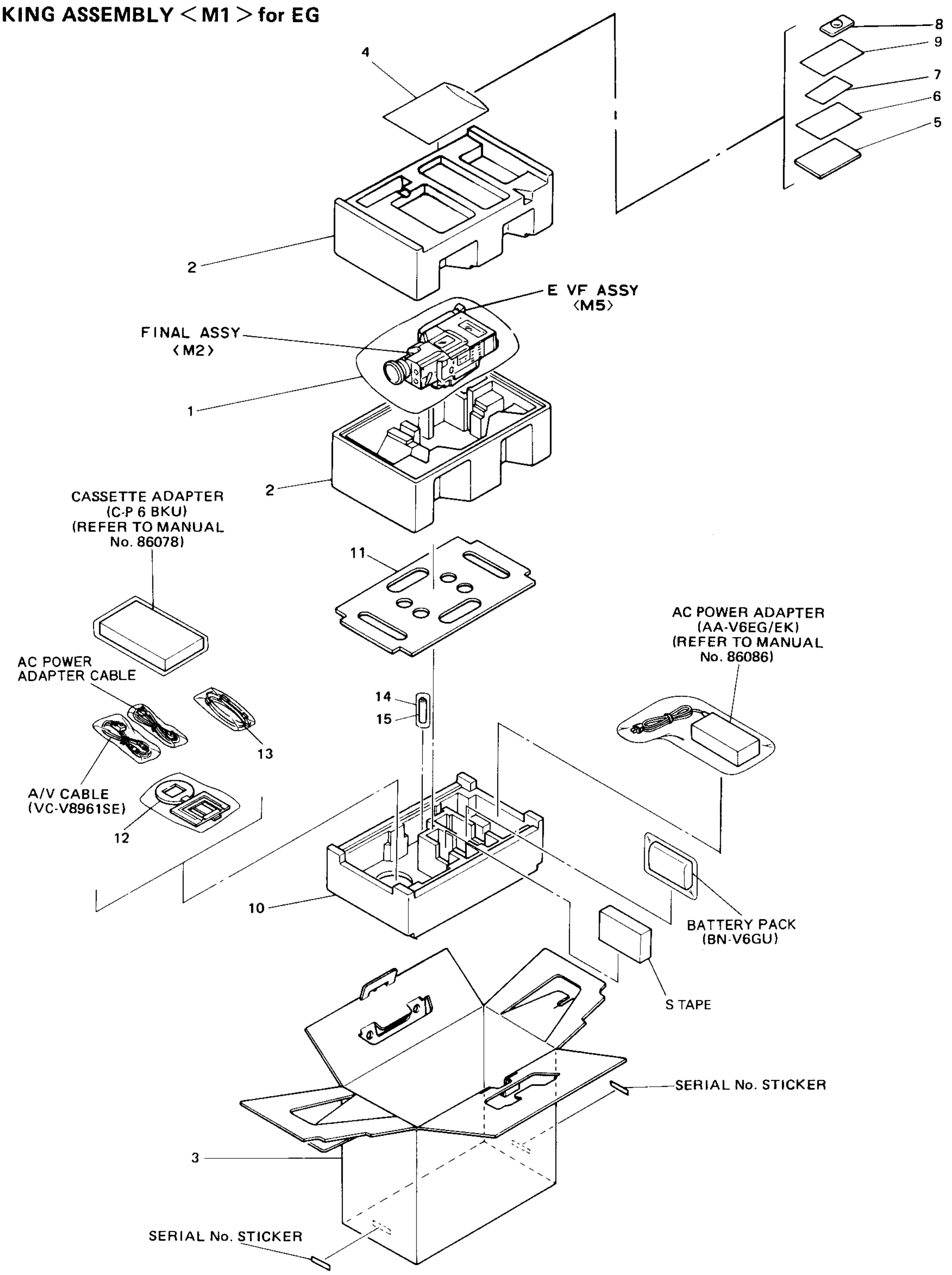
Length (seventh and eighth digits)

The seventh and eighth digits indicate length in millimeters. The preceding figure is zero when the dimension is smaller than 10 mm. For machine screws used in precision equipment whose length is given in units of 0.1 mm, the number indicates ten times the size of their length.

Surface treatment (ninth digit)

Z	Dichromate treatment after galvanizing (MFZn II-C)
N	Nickel plating (MFNiII, MFNiI)
R	Chromium plating (MBCrII, MBCrI)
G	Silver plating (SP4)
B	Black coating after plating
F	Blackening of iron (FB)
M	Blackening after galvanizing
K	Pickling of brass (PF2)
P	Phosphate treatment
W	Uni-chrome plating
L	Coated with transparent paint
A	Colored red after galvanizing (MFZnII-C)
C	Colored blue after galvanizing (MFZzII-C)
T	Colored green after galvanizing (MFZnII-C)
V	Colored purple after galvanizing (MFZnII-C)

6.2 PACKING ASSEMBLY <M1> for EG

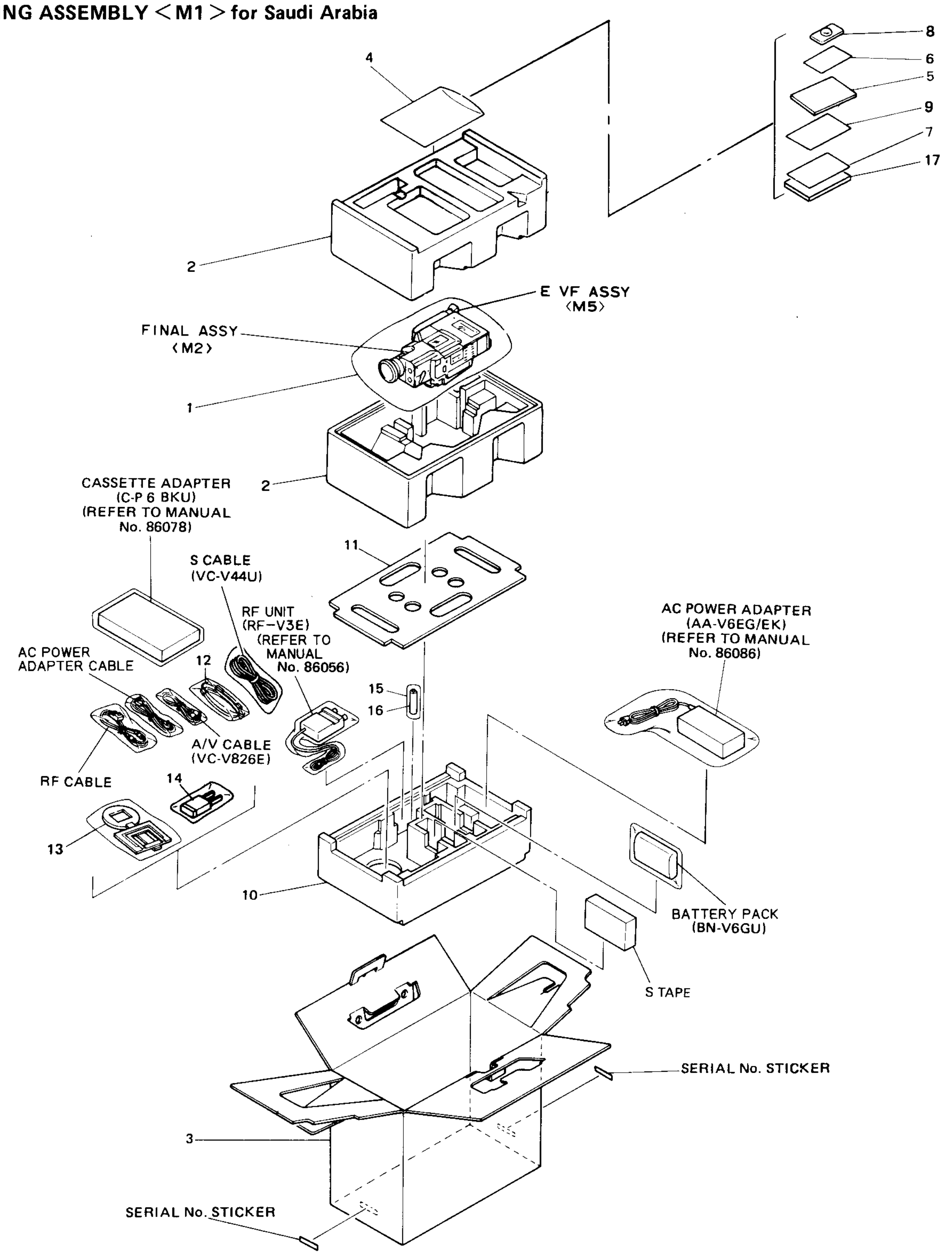

4
8
9
7
6
5
2
E VF ASSY ⟨M5⟩
FINAL ASSY ⟨M2⟩
1
2
CASSETTE ADAPTER (C-P 6 BKU) (REFER TO MANUAL No. 86078)
11
AC POWER ADAPTER (AA-V6EG/EK) (REFER TO MANUAL No. 86086)
AC POWER ADAPTER CABLE
14
15
13
A/V CABLE (VC-V8961SE)
12
10
BATTERY PACK (BN-V6GU)
S TAPE
SERIAL No. STICKER
3
SERIAL No. STICKER

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
✱✱ ✱	✱✱✱✱✱✱✱✱✱✱	✱✱✱✱✱✱✱✱✱✱	✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱

1. PACKING ASSEMBLY ⟨M1⟩ GR-S70EG

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	1	YQM30021-11	POLY BAG
	2	YU30308A	CUSHION ASSY
	3	YQ30549-19	PACKING CASE
	4	QPGA025-03505	POLY BAG
⚠	5	YU30052-133	INSTRUCTIONS
	6	—	DBP INF SHEET
	7	TCN-3379	TAPE CATALOG
⚠	8	YU40547	BATTERY
	9	YU30217-3	TITLE CARD
	10	YQ20227-1-3	ACCESSORY TRAY
	11	YQ41283	ACCESSORY TRAY SHEET
	12	YU40856-2-2	TITLE HOLDER
	13	YQ10188A-1	SHOULDER STRAP
	14	QPGA005-01005	POLY BAG
	15	UM-3DJ	BATTERY

6.5 PACKING ASSEMBLY <M1> for Saudi Arabia

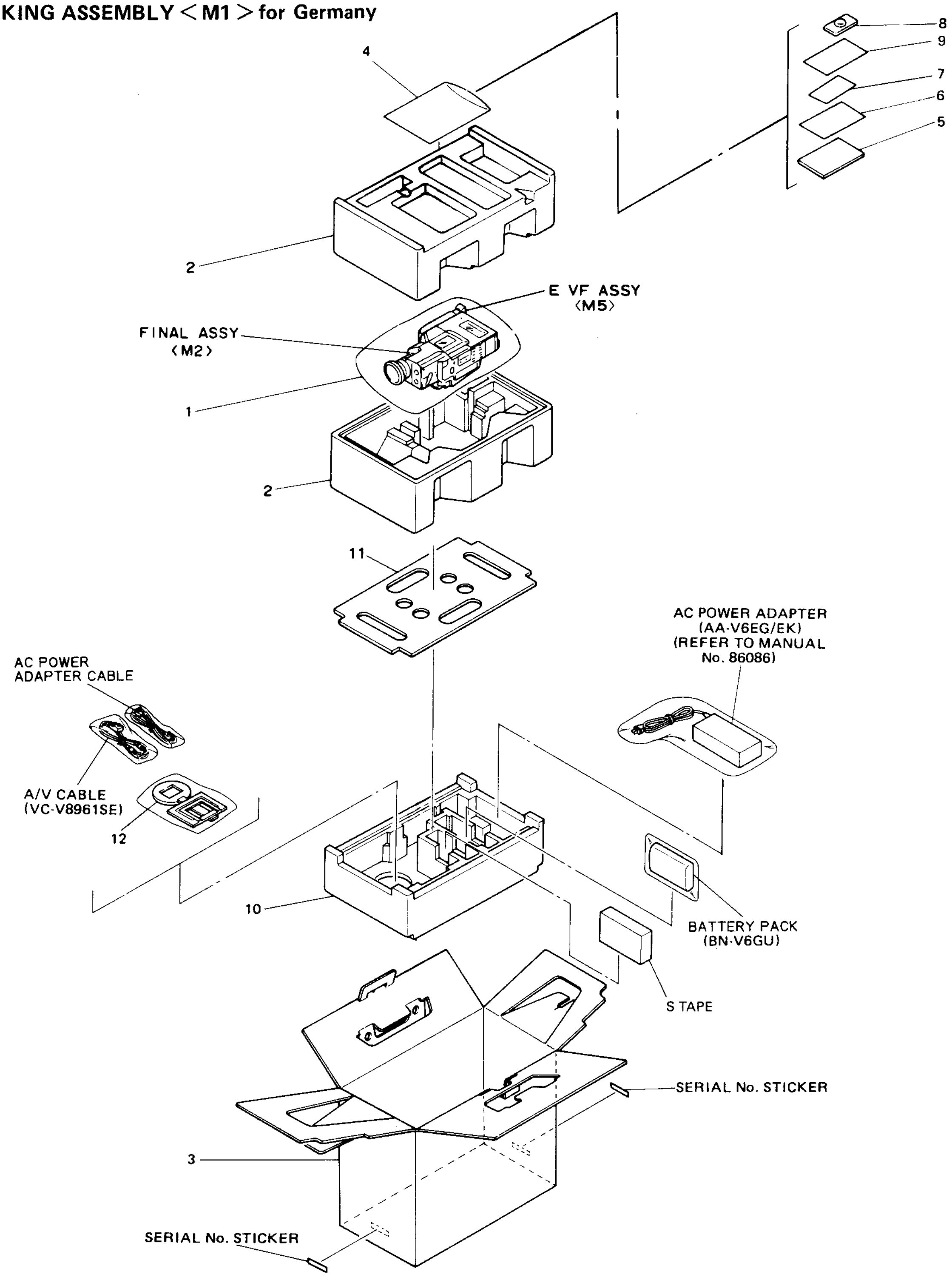

4
8
6
5
9
7
17
2
E VF ASSY
⟨M5⟩
FINAL ASSY
⟨M2⟩
1
2
CASSETTE ADAPTER
(C-P 6 BKU)
(REFER TO MANUAL
No. 86078)
S CABLE
(VC-V44U)
11
RF UNIT
(RF−V3E)
(REFER TO
MANUAL
No. 86056)
AC POWER
ADAPTER CABLE
12
15
16
AC POWER ADAPTER
(AA-V6EG/EK)
(REFER TO MANUAL
No. 86086)
A/V CABLE
(VC-V826E)
RF CABLE
14
13
10
BATTERY PACK
(BN-V6GU)
S TAPE
SERIAL No. STICKER
3
SERIAL No. STICKER

✱✱※✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱

1. PACKING ASSEMBLY ⟨M1⟩ GR-S70EG for Saudi Arabia

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	1	YQM30021-11	POLY BAG
	2	YU30308A	CUSHION ASSY
	3	YQ30549-25	PACKING CASE
	4	QPGA025-03505	POLY BAG
⚠	5	YU30052-136	INSTRUCTION SHEET
⚠	6	PU59932	INSTRUCTION SHEET
	7	TCN-3379	TAPE CATALOG
⚠	8	YU40547	BATTERY
	9	YU30217-3	TITLE CARD
	10	YQ20227-1-3	ACCESSORY TRAY
	11	YQ41283	ACCESSORY TRAY SHEET
⚠	12	YQ10188A-1	SHOULDER STRAP
	13	YU40856-2-2	TITLE HOLDER
	14	QMC0271-001	CONVERSION PLUG
	15	QPGA005-01005	POLY BAG
	16	UM-3DJ	BATTERY
⚠	17	YU30052-133	INSTRUCTIONS

6.6 PACKING ASSEMBLY <M1> for Germany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FINAL ASSY
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(AA-V6EG/EK)
(REFER TO MANUAL
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A/V CABLE
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(BN-V6GU)
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SERIAL No. STICKER

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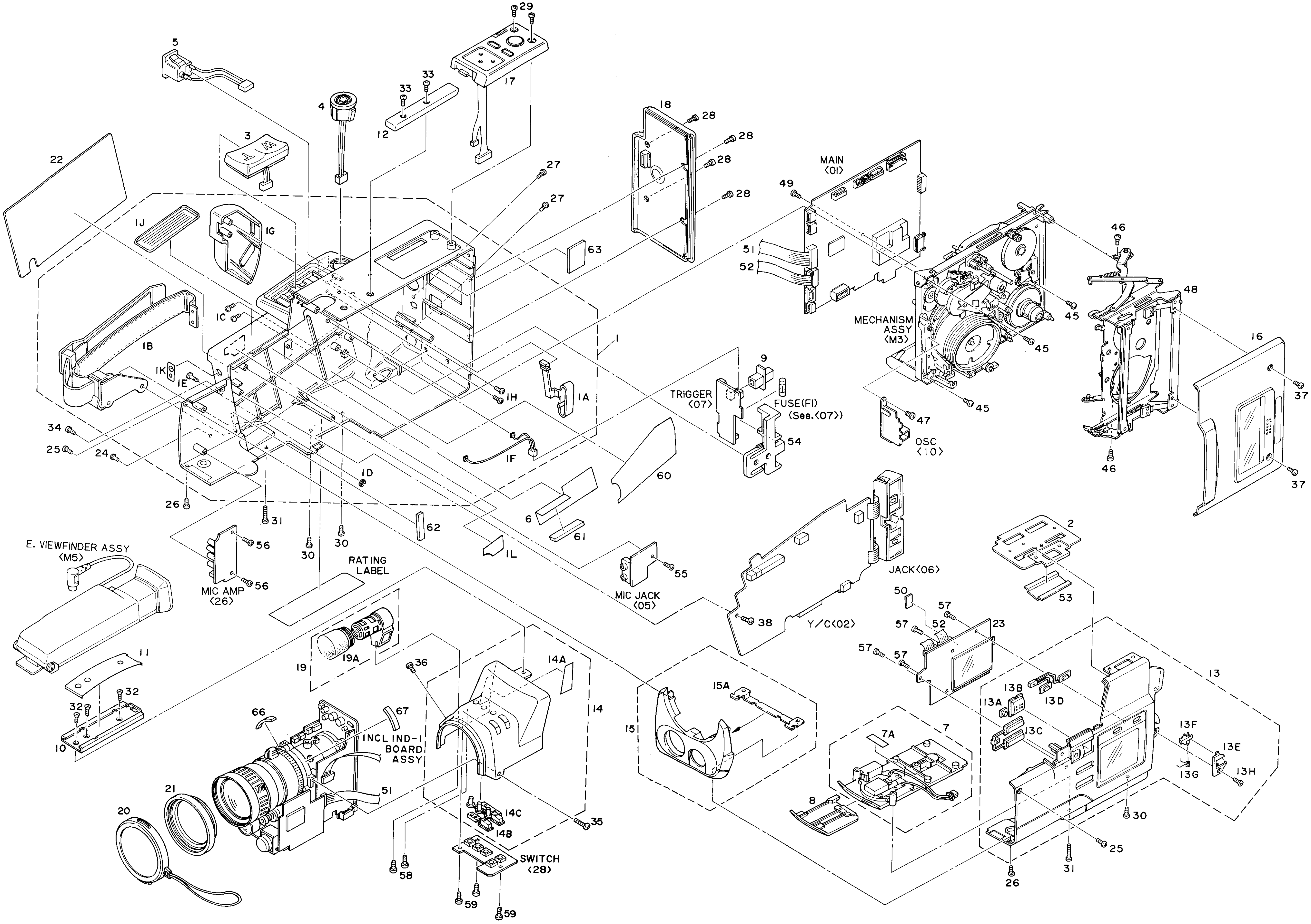
1. PACKING ASSEMBLY ⟨M1⟩ GR-S70EG for Germany

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	1	YQM30021-11	POLY BAG
	2	YU30308A	CUSHION ASSY
	3	YQ30549-33	PACKING CASE
	4	QPGA025-03505	POLY BAG
⚠	5	YU30052-147	INSTRUCTIONS
	6	—	DBP INF SHEET
	7	TCN-3379	TAPE CATALOG
⚠	8	YU40547	BATTERY
	9	YU30217-3	TITLE CARD
	10	YQ20227-1-3	ACCESSORY TRAY
	11	YQ41283	ACCESSORY TRAY SHEET
	12	YU40856-2-2	TITLE HOLDER

6.7 FINAL ASSEMBLY < M2 >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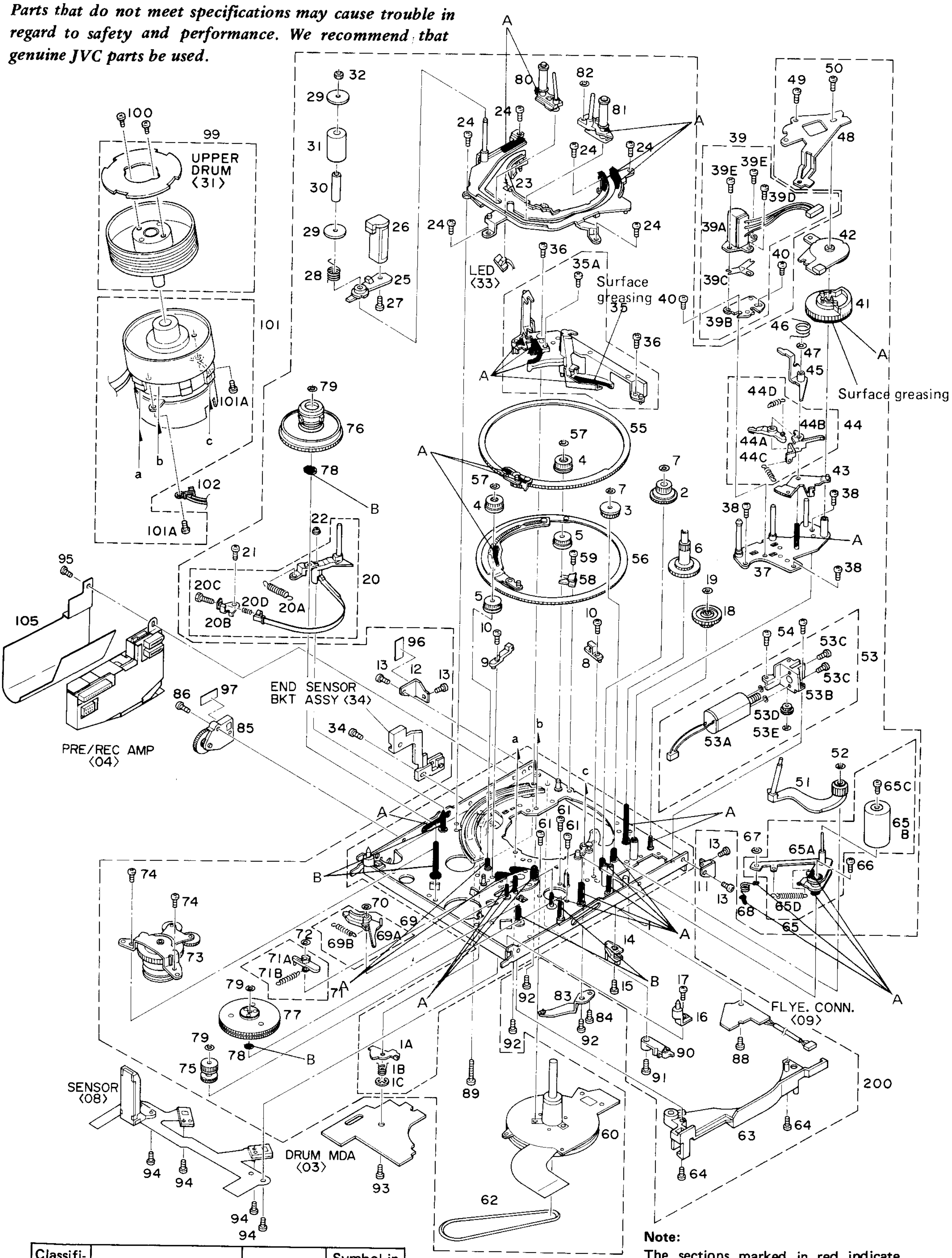
2. FINAL ASSEMBLY ⟨M2⟩

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	1	YQ10092BP	LOWER CASE ASSY
	1A	YQ30091-1-4	BUTTON (TRIGGER)
	1B	YQ20163W-6	GRIP BELT ASSY
	1C	YQM30032-16-2	SCREW, X2
	1D	REE2500	E. RING
	1E	YQ40413	STUD
	1F	ML-Y00062A	BACK-UP BATT. TERM. WIRE ASSY
	1G	YQ30098-49	FINGER REST
	1H	SDSF2006Z	SCREW, X2
	1J	YQ30162	GRIP RUBBER
	1K	YQ40459-18	MIC JACK PLATE
	1L	YQ40546	SHIELD SPACER 3
	2	YQ40417	SHOE BRACKET
	3	YU40204-3	ZOOM SWITCH
	4	YS40076A	E. VF CONNECTOR ASSY
	5	YS40004B	DC. JACK ASSY
	6	YQ41654	SHIELD SPACER 1
	7	YQ30099A-7	BASE ASSY
	7A	YQM30029-12	SPACER
⚠	8	YQ30276-1-3	BACK-UP BATTERY COVER
	9	YQ40418-2	ALARM KNOB
	10	YQ40419-1-2	SHOE
	11	YQ40420-1-2	SHOE SPRING
	12	YQ40421-1-1	DECO PLATE
	13	YQ10126W	UPPER CASE ASSY
	13A	YQ41163-1-1	FULL AUTO KEY
	13B	YQ41164-1-2	FOCUS KEY
	13C	YQ41165-1-1	WHITE BALANCE KEY
	13D	YQ41166	MEMORY KEY
	13E	YQ30110	TAPE GUIDE HOLDER
	13F	YQ30109-1-1	TAPE GUIDE (D)
	13G	YQ40451	TORSION SPRING
	13H	SSSG1740M	SCREW
⚠	14	YQ30449F	FRONT COVER ASSY
	14A	YQ40907-1-1	SHIELD PLATE
	14B	YQ30450-2-4	TITLE MEMORY BUTTON (A)
	14C	YQ30451-1-3	TITLE MEMORY BUTTON (B)
⚠	15	YQ30456D	FRONT PANEL ASSY
	15A	YQ40897-1-1	FRONT PANEL BRACKET
⚠	16	YQ30454Z	CASSETTE COVER ASSY
	17	YQ30059-42	DATE UNIT
	18	YQ20197-31	OPERATION UNIT
	19	YU40631	MICROPHONE
	19A	YU40631-001	WIND SCREEN
	20	YQ40822A	HOOD CAP ASSY
	21	YU40692	HOOD
⚠	22	YU30207-6-2	BATTERY BASE SHEET
	23	YU41394-2	LCD MODULE
	24	YQ40703	CAP
	25	YQM30032-2-2	SPECIAL SCREW, X2 M2X5
	26	YQM30032-3-2	SPECIAL SCREW, X2 M2X5
	27	YQM30032-6-2	SPECIAL SCREW, X2 M2X8
	28	YQM30032-2-2	SPECIAL SCREW, X4 M2X5
	29	YQM30032-4-2	SPECIAL SCREW, X2 M2X6
	30	YQM30032-1-2	SPECIAL SCREW, X3 M2X4
	31	YQM30032-23	SPECIAL SCREW, X2 M2X13
	32	SSSP2005D	SCREW, X3
	33	YQM30032-16-2	SPECIAL SCREW, X2 M2X8
	34	YQM30032-3-2	SPECIAL SCREW, M2X5
	35	YQM30032-9	SPECIAL SCREW, M2.6X6
	36	YQM30032-3-2	SPECIAL SCREW, M2X5
	37	YQM30032-1-2	SPECIAL SCREW, X2 M2X4
	38	SPSG2005M	SCREW
	45	SPSG2608Z	SCREW, X3
	46	SPSK1730M	SCREW, X2
	47	SPSH1725M	SCREW
	48	YQ20237B-2	CASSETTE HOUSING ASSY
	49	YQ40691	SPECIAL SCREW, M1.9X4
	50	YQ40520	DUMPER COVER
	51	YU40614-3	FLAT WIRE 3
		or YU40894	FLAT WIRE3
	52	YU41014	FLAT WIRE 4
		or YU41013	FLAT WIRE 4
	53	YQ41624	SCREW COVER
	54	YQ30311	TRIGGER BOARD STOPPER
	55	SDSF2006Z	SCREW
	56	SDSF2006Z	SCREW, X2
	57	SDSF2005Z	SCREW, X4
	58	YQM30032-29	SCREW, X2
	59	YQM30032-29	SCREW, X3
	60	YQ40545	SHIELD SPACER 2
	61	YQM30029-8	SPACER
	62	YQM30029-7	SPACER
	63	YQM30029-9	SPACER
	66	YQM30029-4	SPACER
	67	YQM30029-5	SPACER

6.8 MECHANISM ASSEMBLY <M3>

BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.



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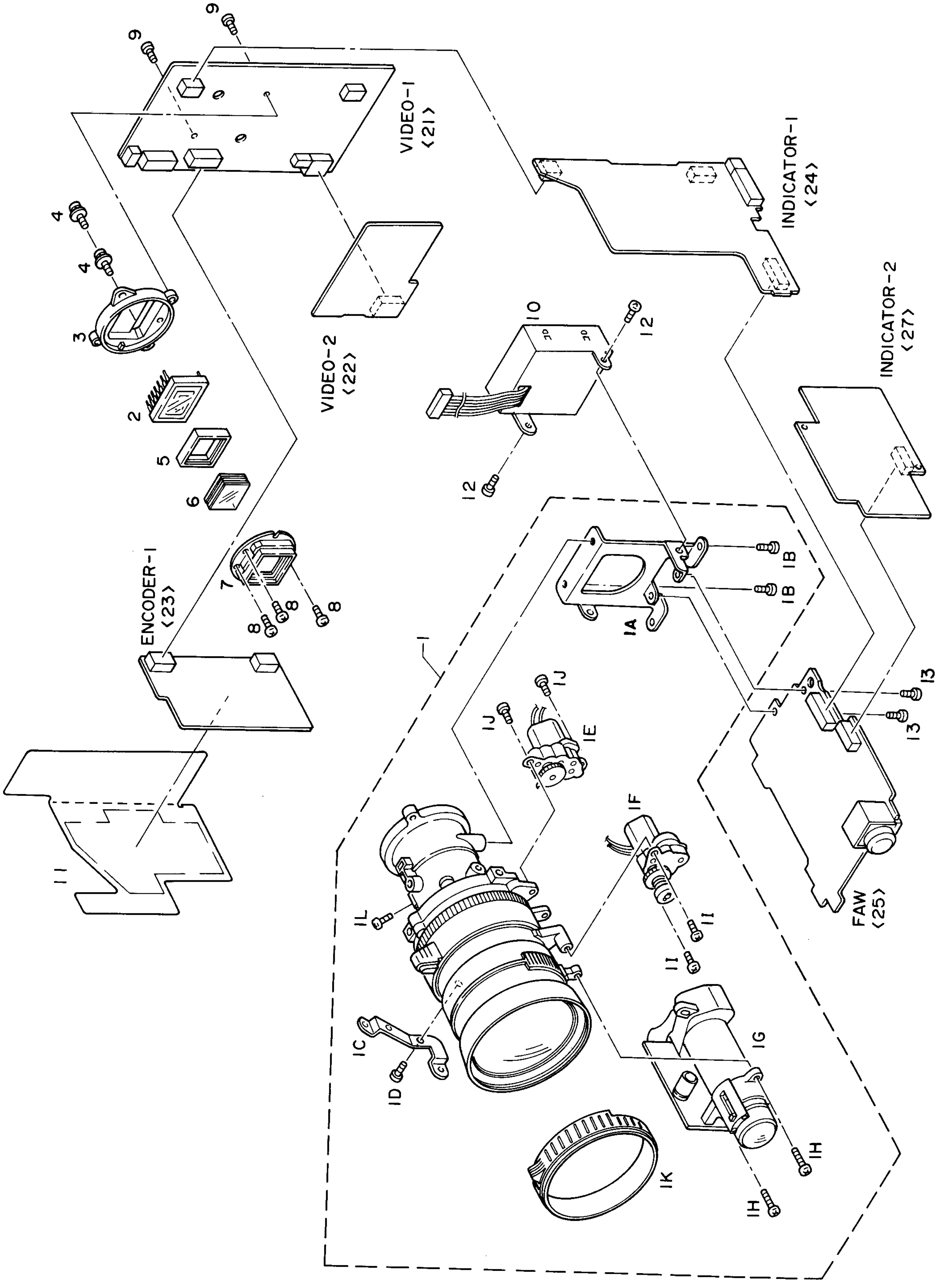
Classification	Name	Parts No.	Symbol in drawing
Grease	Moriton Grease No. 1	MOS2-C	A
Oil	Cosmo Hydro HV100	YTU94027	B

Note:
The sections marked in red indicate lubrication and greasing areas. Follow the items for maintenance and checks, lubricating or greasing the red sections when necessary.

3. MECHANISM ASSEMBLY ⟨M3⟩

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	1	YQ10089A-12	MAIN DECK ASSY
	1A	YQ40737-1-2	EJECT LEVER
	1B	YQ40739-1-3	TORSION SPRING
	1C	PQM30017-10	SLIT WASHER
	2	YQ40744	LOADING GEAR 1
	3	YQ40123	LOADING GEAR 2
	4	YQ40124	RING GUIDE GEAR (S), X2
	5	YQ40125-2	RING GUIDE GEAR (T), X2
	6	YQ30271	TERMINAL GEAR
	7	PQM30017-27	SLIT WASHER, X2
	8	YQ40746-1-1	RING GUIDE 1
	9	YQ40128-1-1	RING GUIDE 3
	10	SPSH1725M	SCREW, X2
	11	YQ40747	SUPPORT (L)
	12	YQ40748	SUPPORT (R)
	13	SPSH1725M	SCREW, X4
	14	YQ30460	LOADING GUIDE
	15	SPSH1740M	MINI SCREW
	16	YQ41441	GUIDE PIN
	17	SPSH1725M	SCREW
	18	YQ40750	MIDDLE GEAR
	19	PQM30017-27	SLIT WASHER
	20	YQ40389B-4	TENSION SERVO ASSY
	20A	YQM30001-30	TENSION SPRING
	20B	YQ40266	ADJUST PLATE
	20C	SPSK1780M	MINI SCREW
	20D	YQM30002-1	COMPRESSION SPRING
	21	SPSH1725M	SCREW
	22	YQ40059	CAP
	23	YQ40759A-4	GUIDE RAIL ASSY
	24	SPSH1725M	SCREW, X6
	25	YQ20050-1-9	FE HEAD ARM
	26	YU40492-2	F.E. HEAD
	27	SPSK1630M	SCREW
	28	YQ40391-1-2	TORSION SPRING
	29	YQ41315	FLANGE, X2
	30	YQ41378	COLLAR
	31	YQ41121	IMPEDANCE ROLLER
	32	NTS2000N	NUT
	34	SPSH1740M	MINI SCREW
	35	YQ40762A-7	UV BASE ASSY
	35A	SPSH1730M	MINI SCREW
	36	SPSH1730M	MINI SCREW, X2
	37	YQ40763C	SUB DECK ASSY
	38	SPSH1725M	SCREW, X3
	39	YQ40767A-4	A/C HEAD ASSY
	39A	YU41671	AUDIO/CONTROL HEAD
	39B	YQ40768	X PLATE
	39C	YQ40354-1-2	HEAD SPRING
	39D	YQ40904B	ALOCK SCREW, M1.7X3
	39E	YQ40904C	ALOCK SCREW, X2, M1.7X25
	40	YQ40904A-1	ALOCK SCREW, X2, M1.7X20
	41	YQ20057-1-3	CAM GEAR
	42	YU41080	CAM ENCODER
	43	YQ40769A-5	ARM GEAR ASSY
	44	YQ40812A	LOCK ARM ASSY
	44A	YQ40358	LOCK ARM 1
	44B	YQ40771	LOCK ARM 2
	44C	YQ40342	TENSION SPRING
	44D	YQ40362	TENSION SPRING
	45	YQ40772A-1	LOCK ARM 3 ASSY
	46	YQ41113	TORSION SPRING
	47	PQM30017-25	SLIT WASHER
	48	YQ30266-1-4	MIDDLE POLE STOPPER
	49	SPSH1725M	SCREW
	50	SPSH1780M	SCREW
	51	YQ40774A-1	MIDDLE POLE ASSY
	52	PQM30017-23	SLIT WASHER
⚠	53	YQ30272A-5	MODE CONTROL MOTOR BKT ASSY
⚠	53A	YU40620V-1	MODE CONTROL MOTOR
	53B	YQ40777A-4	MODE CONTROL BRAKET
	53C	SPSH1425M	SCREW, X2
	53D	YQ40778	WORM WHEEL
	53E	PQM30017-27	SLIT WASHER
	54	SPSH1730M	MINI SCREW, X2
	55	YQ40779A	SUPPLY LOADING RING ASSY
	56	YQ40781A-3	TAKE-UP LOADING RING ASSY
	57	PQM30017-27	SLIT WASHER, X2
	58	YQ40784	RING GUIDE 2
	59	SPSH1725M	SCREW
⚠	60	YU40621V	CAPSTAN MOTOR ASSY
⚠		or YU40930V	CAPSTAN MOTOR ASSY
	61	SPSH1725M	SCREW, X3
	62	YQM30003-3	BELT
	63	YQ30268-1-4	CAPSTAN MOTOR COVER
	64	SPSH1740M	SCREW, X2
	65	YQ40785A-1	PINCH ROLLER ARM ASSY
		or YQ40785C	PINCH ROLLER ARM ASSY
		or YQ40785B-1	PINCH ROLLER ARM ASSY
	65A	YQ40786A-1	ARM ASSY
		or YQ40786B	ARM ASSY
	65B	YQ40373A	PINCH ROLLER ASSY
		or YQ40816A	PINCH ROLLER ASSY
	65C	YQ40401	PINCH ROLLER CAP
	65D	YQ40793	TORSION SPRING
	66	PQ41535-4	SCREW
	67	PQM30017-27	SLIT WASHER
	68	YQ40794-1-1	TORSION SPRING
	69	YQ40795B	TAKE-UP BRAKE LEVER ASSY
	69A	YQ30269	TAKE-UP BRAKE LEVER
	69B	YQ40796-2	TORSION SPRING
	70	PQM30017-27	SLIT WASHER
	71	YQ41334A	SEARCH BRAKE LEVER ASSY
	71A	YQ30517	SEARCH BRAKE LEVER
	71B	YQ40798-1-1	TORSION SPRING
	72	PQM30017-27	SLIT WASHER
	73	YU40622-1-2	CENTER PULLEY BRACKET ASSY
	74	SPSH1725M	SCREW, X2
	75	YQ40147-1-1	TAKE-UP GEAR
	76	YU40623-1-1	SUPPLY REEL DISK ASSY
	77	YU40624-1-1	TAKE-UP CLUTCH ASSY
	78	Q03093-835	WASHER, X2
	79	PQM30017-27	SLIT WASHER, X3
	80	YU41174-1-1	SUPPLY POLE BASE ASSY
	81	YU41175-1-1	TAKE-UP POLE BASE ASSY
	82	PQM30017-27	SLIT WASHER
	83	YU40716-1-1	BRUSH
	84	SPSH1730M	MINI SCREW
	85	YU40001	DAMPER
	86	SPSH1760M	SCREW
	88	PQ41450-2	SCREW
	89	SPSH1711M	MINI SCREW
	90	YQ41172	FLY WIRE GUIDE
	91	SPSH1730M	MINI SCREW
	92	SPSH1730M	MINI SCREW, X3
	93	PQ41450-2	SCREW
	94	SPSH1730M	MINI SCREW, X4
	95	SPSH1720M	SCREW
	96	YQ40520	DUMPER COVER
	97	YQ40520	DUMPER COVER
	99	YDM2018D	UPPER DRUM ASSY
	100	YDM4031	SCREW, X2
	101	YDM2020D	LOWER DRUM MOTOR ASSY
	101A	SPSK1725M	SCREW, X2
	102	YU41074	DEW SENSOR
	105	YU41261	SHIELD PLATE
	200	YS20144D	MECHA ASSY

6.9 OPTICAL BLOCK ASSEMBLY < M4 >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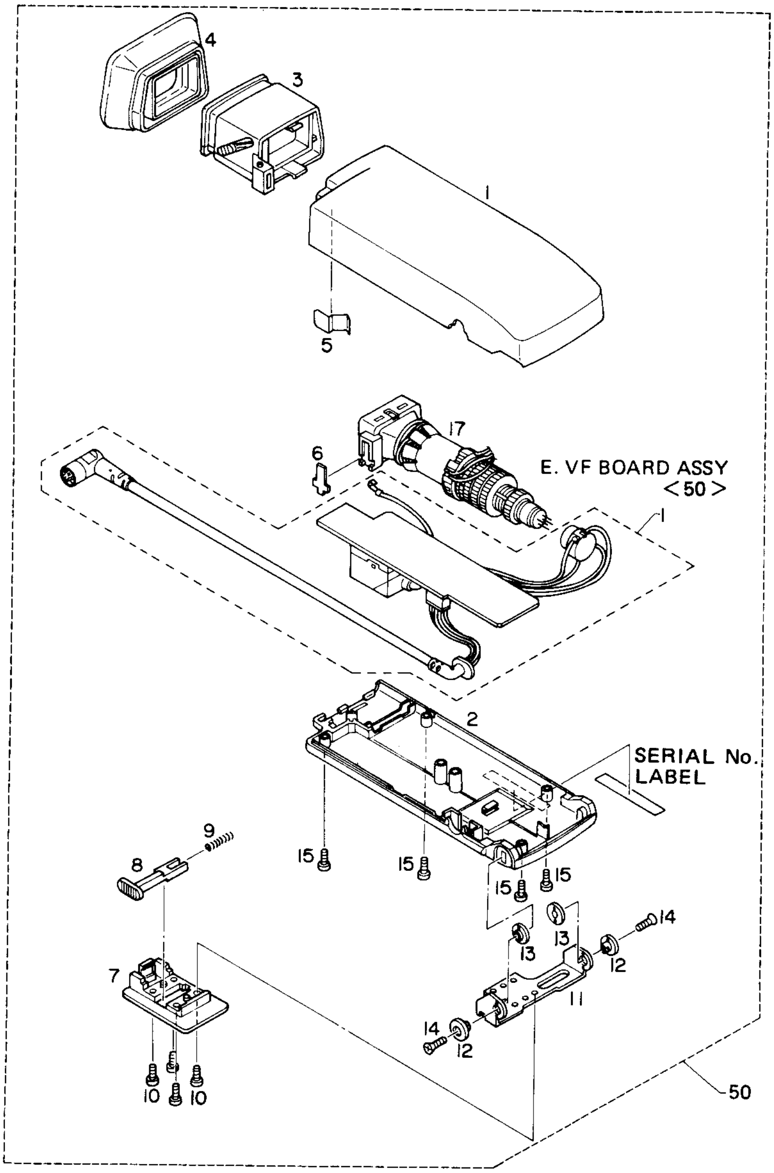
4. OPTICAL BLOCK ASSEMBLY 〈M4〉

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
⚠	1	YU40693-12	OPTICAL BLOCK ASSY
	1A	YQ40826-1-2	OP BRACKET
	1B	SDSF2605Z	SCREW, X2
	1C	YQ40711	LENS BRACKET
	1D	SDSF2605Z	SCREW
	1E	YU40189-002	ZOOM MOTOR UNIT
	1F	YU40189-003	AF MOTOR UNIT
	1G	YU40635-004	AF UNIT
	1H	YU40189-005	SCREW, X2 M1.7X6
	1I	YU40189-007	SCREW, X2 M1.7X4
	1J	YU40189-008	SCREW, X2 M1.7X4
	1K	YU40189-009	RUBBER
	1L	YU40189-010	SCREW, M2X5.5
⚠	2	UPD3556AD-02R	IC, (CCD)
		or UPD3556AD-02T	IC, (CCD)
	3	YQ30095	IMAGER HOLDER
	4	DPSP2008Z	SCREW, X2
	5	PQ42339	SPACER RUBBER
	6	YU41091	OPTICAL LPF
	7	YQ30096-2	OPTICAL LPF HOLDER
	8	SPSK2004F	MINI SCREW, X3
	9	SPSP2004Z	SCREW, X2
	10	YU41431	DC-DC CONVERTER
		or YU41058	DC-DC CONVERTER
	11	YU30212	SHIELD PLATE
	12	SPSP2004Z	SCREW, X2
	13	SPSP2004Z	SCREW, X2

6.10 ELECTRONIC VIEWFINDER ASSEMBLY < M5 >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LABEL
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※**********************************

5. ELECTRONIC VIEWFINDER ASSEMBLY ⟨M5⟩

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	1	YU30181-118	TOP CASE
	2	YU30181-002	BOTTOM CASE
	3	YU30181-003	LENS ASSY
	4	YU30181-004	LENS RUBBER
	5	YU30181-005	PLATE SPRING
	6	YU30181-014	HIGH BOLTAGE COVER
	7	YU30181-006	SHOE
	8	YU30181-007	LEVER
	9	YU30045-016	SPRING
	10	YU30045-013	SCREW, X4
	11	YU30181-008	ARM
	12	YU30181-009	COVER, X2
	13	YU30045-022	BUSHING, X2
	14	YU30181-010	SCREW, X2 M1.7X9
	15	YU30045-014	SCREW, X4
	17	YU30181-011	CRT ASSY
⚠	50	YU30181AP-22	E. VIEWFINDER ASSY

SECTION 7
ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

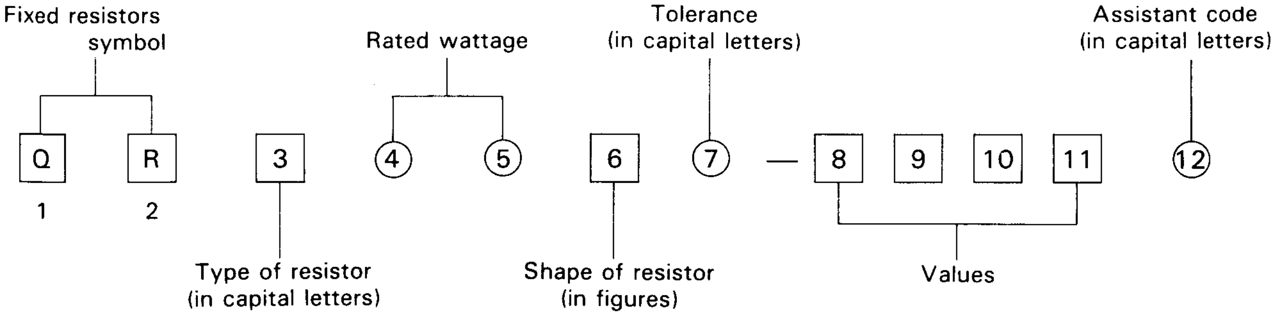
NOTES:

- [M] indicates mechanical symbol number.
- [2 digits] indicates circuit board symbol number.
- "X " indicates quantity per set.

7.1 STANDARD PART NUMBER CODING

7.1.1 Fixed resistor coding

Fixed resistor part numbers are as follows.


Fixed resistors symbol
Rated wattage
Tolerance (in capital letters)
Assistant code (in capital letters)
Q
R
3
④
⑤
6
⑦
—
8
9
10
11
⑫
1
2
Type of resistor (in capital letters)
Shape of resistor (in figures)
Values

Type of resistor (third digit)

C	Composition resistors
D	Carbon film resistors
F	Unflammable resistors
G	Oxide metal film resistors
H	Fusible resistors
M	Metal plate resistors
S	Metal glazed resistors
V	Precision metal film resistors
W	Wire wound resistors
X	Metal film resistors
Z	Special resistors

Rated wattage (fourth and fifth digits)

A0	1/10 W
18	1/8 W
16	1/6 W
14	1/4 W
12	1/2 W
01	1 W
02	2 W
03	3 W
04	4 W
05	5 W
06	6 W
07	7 W
75	7.5 W
08	8 W
10	10 W
15	15 W
A6	16 W
20	20 W
30	30 W

Tolerance (seventh digit)

F	±1 %
G	±2 %
J	±5 %
K	±10 %
M	±20 %

Assistant code (twelfth digit)

A	Small type
B	Small type
S	Small type
Y	Lead tapping
Z	Lead tapping

Values

(eighth — tenth or eleventh digits)

examples:

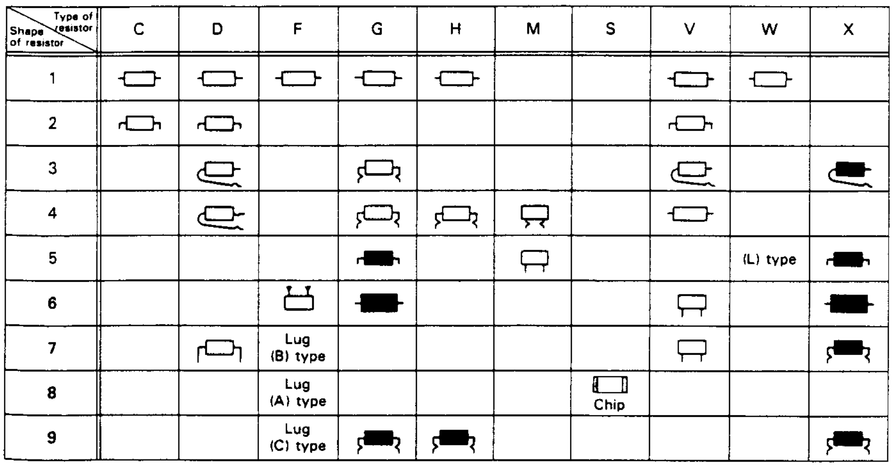
R47		0.47 Ω
4R7		4.7 Ω
470	47×10^0	47 Ω
471	47×10^1	470 Ω
472	47×10^2	4.7 kΩ
473	47×10^3	47 kΩ
474	47×10^4	470 kΩ
475	47×10^5	4.7 MΩ

QRV resistance shown by four digits:

4640	464×10^0	464 Ω
4641	464×10^1	4.64 kΩ
4642	464×10^2	46.4 kΩ

Shape of resistor (sixth digit)

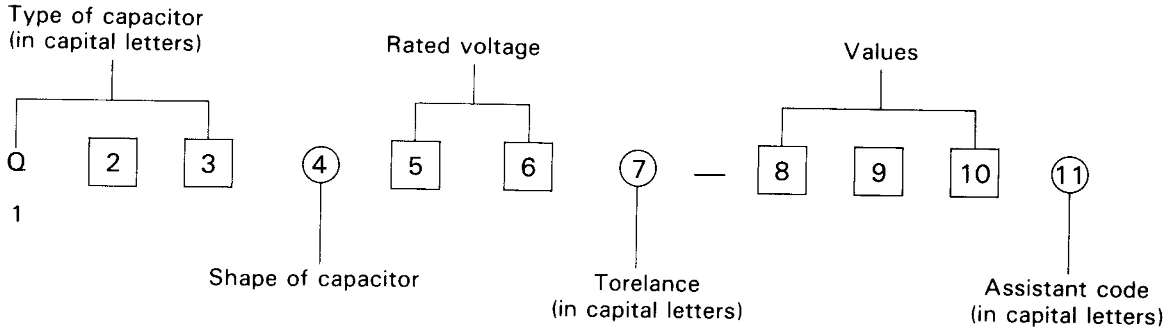
Note: ■ indicates flame retardant resistor.



Type of resistor / Shape of resistor	C	D	F	G	H	M	S	V	W	X
1										
2										
3										
4										
5									(L) type	
6										
7			Lug (B) type							
8			Lug (A) type				Chip			
9			Lug (C) type							

7.1.2 Fixed capacitor coding

Fixed capacitor part numbers are as follows.


Type of capacitor
(in capital letters)
Rated voltage
Values
Q
1
2
3
4
5
6
7
—
8
9
10
11
Shape of capacitor
Torelance
(in capital letters)
Assistant code
(in capital letters)

Ceramic capacitors

Type of capacitor (first — third digits)		Shape of capacitor (fourth digit)				
Symbol	Characteristics	Mono-direction	Kink lead	Axial lead	Axial forming lead	Chip
QCC	Ceramic	1		4	5	
QCD	High capacitance					A
QCF	High capacitance	1,4	3			8,A
QCS	Temperature compensation	1	3	4	5	8,A
QCT	Temperature compensation	Special coding				8,A
QCV	Ceramic			1	3	
QCX	Ceramic			1	3	
QCY	High capacitance	1,4	3	6	7	8,A
QCZ	Special type	Special coding				
QCB	Ceramic			B	C	

Electrolytic capacitors

Type of capacitor (first — third digits)		Shape of capacitor (fourth digit)				
Symbol	Characteristics	Tubular	Mono-direction	Anti-stress	Forming	Snap-in
QEB	Low leakage		4	5	6	
QEC	Low leakage		4,8,A	9,B	6,C	
QEE	Tantalum (normal)		4	5	6	
	Tantalum (small)		8			
QEF	Chip tantalum	8 (chip type)				
QEG	Low impedance		4			
QEK	Miniature type		4	5	6	
QEL	Small type		4	5	6	7
QEM	Small type		4,A	5	6	
QEN	Non-polar	2	4	5	6	
QEP	Non-polar (small)		4,A	5,B	6,C	
QER	Miniature type		4	5	6	
QET	Small type	2	4,A	5,B	6,C	7
QEU	Small type		4	5	6	
QEV	Small type		4		6	7
QEW	Normal	2	4	5	6	7

Paper film capacitors

Type of capacitor (first – third digits)		Shape of capacitor (fourth digit)				
		Tubular	Normal		Flame retardant	
Symbol	Characteristics		Mono-direction	Kink lead	Mono-direction	Kink lead
QFA	Metalized polypropylene				7	
QFE	Metalized mylar				5	
QFF	Film mica		4			
QFG	Polypropylene film		4	8		
QFH	Metalized mylar	2	4	3	5,7	6
QFJ	Mylar (special)		4			
QFK	Metalized mylar (small)				5	
QFM	Mylar	2	4	3,7	5	6
QFN	Mylar (small)		4	3		
QFP	Polypropylene		4	3,8		
QFS	Polystyrole	2	4	3		
QFV	Thin film		4	8		
QFZ	Special type	Special coding				

Rated voltage (fifth and sixth digits)

Sixth digit / Fifth digit	A	B	C	D	E	F	G	H	J	K	V	W	X
0						3.15	4.0		6.3				
1	10		16	20	25		40	50	63	80	35		
2	100	125	160	200	250	315	400	500	630		350	450	600
3	1000	1250		2000				5000					

Tolerance (seventh digit)

A	$^{+100}_{-10}$ %	M	± 20 %
F	± 1 %	N	± 30 %
G	± 2 %	P	$^{+100}_{-0}$ %
H	$^{+50}_{-10}$ %	R	$^{+30}_{-10}$ %
J	± 5 %	X	$^{+40}_{-20}$ %
K	± 10 %	Z	$^{+80}_{-20}$ %

Values (eighth – tenth digits)

Example : Values are in picofarads

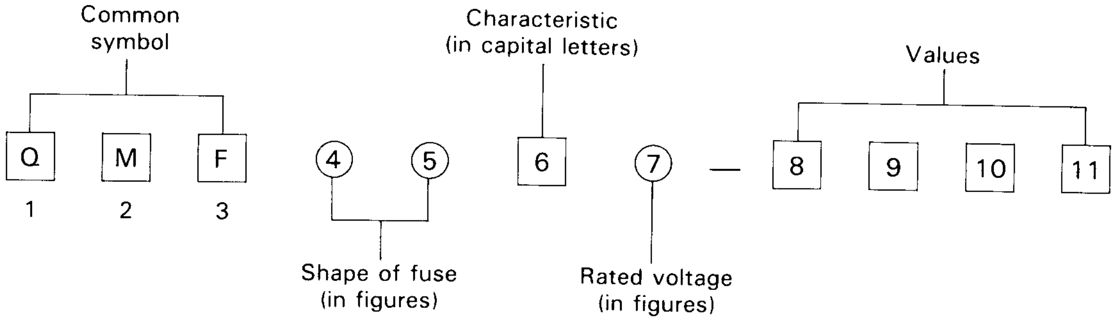
101 .... 10×10^1 pF .... 100 pF
102 .... 10×10^2 pF .... 1,000 pF (0.001 μF)
103 .... 10×10^3 pF .... 10,000 pF (0.01 μF)
104 .... 10×10^4 pF .... 100,000 pF (0.1 μF)
105 .... 10×10^5 pF .... 1 μF
5R0 .... 5.0 pF

Assistant code (eleventh digit)

G	Small size
Z	Lead tapping
Y	Lead tapping

7.1.3 Fuse coding

Standard fuse part numbers are as follows.


Common symbol
Characteristic (in capital letters)
Values
Q
M
F
4
5
6
7
—
8
9
10
11
1
2
3
Shape of fuse (in figures)
Rated voltage (in figures)

Shape of fuse
(fourth and fifth digits)

51	ϕ5.2 × 20 mm
60	ϕ6.4 × 30 mm
61	ϕ6.35 × 31.8 mm
63	ϕ6.4 × 30 mm with lead wires
66	ϕ6.35 × 31.8 mm with lead wires
00	Special type

Rated voltage
(seventh digit)

1	AC125 V
2	AC250 V
3	0.1 – 1 A : AC250 V 1.25 – 6.3 A : AC125 V

Values
(eighth-tenth or eleventh digits)
example:

R63	.... 0.63 A
1R0	.... 1.0 A
2R5	.... 2.5 A
100	.... 10 A
R315	.... 0.315 A
1R25	.... 1.25 A

Characteristics (sixth digit)

Symbol	Fusing Current	Fusing Time	Remarks
A	210 %	Within 2 min.	Anti-rush type (for Europe)
	275 %	0.6 – 10 sec.	
	400 %	0.15 – 3 sec.	
	1000 %	0.02 – 0.3 sec.	
B	210 %	Within 30 min.	Regular fusible type (for SEMKO, Europe)
	275 %	0.05 – 2 sec.	
	400 %	0.01 – 0.3 sec.	
C	135 %	Within 1 hr.	Regular fusible type (for UL, Japan)
	200 %	Within 2 min.	
E	210 %	Within 2 min.	Anti-rush type (for Europe)
	275 %	0.6 – 10 sec.	
	400 %	0.15 – 3 sec.	
	1000 %	0.02 – 0.3 sec.	
J	135 %	Within 1 hr.	Anti-rush type
	200 %	Within 2 min.	
M	135 %	Within 1 hr.	Regular fusible type (for UL)
	200 %	Within 2 min.	
R	160 %	Within 1 hr.	Regular fusible type
	200 %	Within 2 min.	
S	160 %	Within 1 hr.	Anti-rush type
	200 %	Within 2 min.	
	700 % – 2000 %	Within 0.01 sec.	
U	135 %	Within 1 hr.	Anti-rush type (for UL)
	200 %	Within 2 min.	
	800 % – 2000 %	Within 0.01 sec.	

✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱

6. MAIN 3 BOARD ASSEMBLY ⟨01⟩

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	PWBA	YB10037G	MAIN BOARD ASSY
	IC1	S-81252HG	IC
	IC2	M5236ML	IC
	IC3	BA6993F	IC
	IC101	BU3767K	IC
	IC102	M52434FP	IC
	IC103	M52410FP	IC
	IC104	VC5026G	IC
	IC105	BA226F	IC
	IC106	NJM2904E	IC
	or	LM2904E	IC
	IC301	BA7757BK	IC
	IC302	NJM2904E	IC
	or	LM2904E	IC
	IC401	M37412M4-104FP	IC, (CPU)
	IC402	S-8054HN	IC
	IC403	BU4584BF	IC
	IC404	M54543ASL	IC
	Q1	2SB1009(PQ)	TRANSISTOR
	Q2	DTA124EU	TRANSISTOR
	Q3	DTC144EU	TRANSISTOR
	Q4	2SJ146	TRANSISTOR
	Q5	2SJ146	TRANSISTOR
	Q101	DTA124EU	TRANSISTOR
	Q102	2SK665	TRANSISTOR
	Q103	2SC4081(QRS)	TRANSISTOR
	Q104	DTC144EU	TRANSISTOR
	Q105	DTC144EU	TRANSISTOR
	Q106	DTC144EU	TRANSISTOR
	Q107	DTC144EU	TRANSISTOR
	Q108	DTC144EU	TRANSISTOR
	Q109	DTC144EU	TRANSISTOR
	Q110	DTC144EU	TRANSISTOR
	Q111	2SK665	TRANSISTOR
	Q112	2SB798(MLK)	TRANSISTOR
	Q113	2SB798(MLK)	TRANSISTOR
	Q114	2SB798(MLK)	TRANSISTOR
	Q115	FMG2	TRANSISTOR
	Q116	DTC144EU	TRANSISTOR
	Q301	DTC144EU	TRANSISTOR
	Q302	DTA124EU	TRANSISTOR
	Q303	FMW3	TRANSISTOR
	Q304	2SC4097(QR)	TRANSISTOR
	Q305	2SC4097(QR)	TRANSISTOR
	Q306	2SA1036K(QR)	TRANSISTOR
	Q307	2SA1036K(QR)	TRANSISTOR

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	Q308	DTC144EU	TRANSISTOR	
	Q309	DTC144EU	TRANSISTOR	
	Q310	DTC144EU	TRANSISTOR	
	Q313	DTC144EU	TRANSISTOR	
	Q314	DTC144EU	TRANSISTOR	
	Q316	DTC144EU	TRANSISTOR	
	Q317	DTC144EU	TRANSISTOR	
	Q401	2SA1576(QRS)	TRANSISTOR	
	Q402	2SC4081(QRS)	TRANSISTOR	
	Q403	2SK665	TRANSISTOR	
	Q404	2SK665	TRANSISTOR	
	Q405	DTA124EU	TRANSISTOR	
	Q406	2SA1576(QRS)	TRANSISTOR	
	Q407	2SA1576(QRS)	TRANSISTOR	
	Q409	DTC144EU	TRANSISTOR	
	Q412	DTC144EU	TRANSISTOR	
	Q420	2SA1576(QRS)	TRANSISTOR	
	Q421	2SA1576(QRS)	TRANSISTOR	
	Q422	2SA1576(QRS)	TRANSISTOR	
	Q423	FMG2	TRANSISTOR	
	D1	DAN202U	DIODE	
	D2	FMN1	DIODE	
	D101	RD8.2M(B2)	ZENER DIODE	
	or	RD8.2M(B3)	ZENER DIODE	
	or	RD8.2M(B1)	ZENER DIODE	
	D102	DA204U	DIODE	
	D103	MA141WK	DIODE	
	D104	RB451F	DIODE	
	D105	MA141WK	DIODE	
	D106	MA141WK	DIODE	
	D401	DA204U	DIODE	
	D402	DAN202U	DIODE	
	D403	DAP202U	DIODE	
	D406	RB451F	DIODE	
	D407	DAP202U	DIODE	
	D408	DAN202U	DIODE	
	D409	DAP202U	DIODE	
	R1	NRSA63J-221N	RESISTOR	220Ω, 1/16W
	R3	NRSA63J-822N	RESISTOR	8.2KΩ, 1/16W
	R4	NVP1301-102N	V RESISTOR, REG 8V	1KΩ
	R5	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R6	NRSA63J-154N	RESISTOR	150KΩ, 1/16W
	R7	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R8	NRSA63J-154N	RESISTOR	150KΩ, 1/16W
	R9	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R11	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R12	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R13	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R14	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R15	NRSA63J-123N	RESISTOR	12KΩ, 1/16W
	R17	NRSA63J-105N	RESISTOR	1MΩ, 1/16W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R19	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R20	NRSA63J-824N	RESISTOR	820KΩ, 1/16W
	R21	NRSA63J-105N	RESISTOR	1MΩ, 1/16W
	R22	NRSA63J-824N	RESISTOR	820KΩ, 1/16W
	R101	YU40174-1-1	V RESISTOR, TRACKING VR	
	R102	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R103	NVP1301-103N	V RESISTOR, TRACKING PRESET	10KΩ
	R104	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R105	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R106	NVP1301-474N	V RESISTOR, LP CTL DELAY	470KΩ
	R107	NRSA63J-683N	RESISTOR	68KΩ, 1/16W
	R108	NVP1301-474N	V RESISTOR, PB SW POINT	470KΩ
	R109	NRSA63J-333N	RESISTOR	33KΩ, 1/16W
	R110	NRSA63J-123N	RESISTOR	12KΩ, 1/16W
	R113	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R115	NRSA63J-105N	RESISTOR	1MΩ, 1/16W
	R116	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R117	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R118	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R119	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R120	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R121	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R122	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R123	NRSA63J-273N	RESISTOR	27KΩ, 1/16W
	R124	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R125	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R126	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R127	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R128	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R129	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R130	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R131	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R133	NRSA63J-273N	RESISTOR	27KΩ, 1/16W
	R135	NRSA63J-682N	RESISTOR	6.8KΩ, 1/16W
	R136	NRSA63J-153N	RESISTOR	15KΩ, 1/16W
	R137	NRSA63J-223N	RESISTOR	22KΩ, 1/16W
	R138	NRSA63J-823N	RESISTOR	82KΩ, 1/16W
	R139	NRSA63J-105N	RESISTOR	1MΩ, 1/16W
	R140	NRSA63J-154N	RESISTOR	150KΩ, 1/16W
	R141	NRSA63J-184N	RESISTOR	180KΩ, 1/16W
	R145	NRSA63J-823N	RESISTOR	82KΩ, 1/16W
	R146	NRSA63J-274N	RESISTOR	270KΩ, 1/16W
	R147	NRSA63J-824N	RESISTOR	820KΩ, 1/16W
	R148	NRSA63J-154N	RESISTOR	150KΩ, 1/16W
	R149	NRSA63J-184N	RESISTOR	180KΩ, 1/16W
	R150	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R151	NRSA63J-471N	RESISTOR	470Ω, 1/16W
	R152	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R153	NRSA63J-394N	RESISTOR	390KΩ, 1/16W
	R154	NRSA63J-334N	RESISTOR	330KΩ, 1/16W
	R155	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R156	NRSA63J-224N	RESISTOR	220KΩ, 1/16W
	R158	NRSA63J-561N	RESISTOR	560Ω, 1/16W
	R159	NRSA63J-561N	RESISTOR	560Ω, 1/16W
	R160	NRSA63J-332N	RESISTOR	3.3KΩ, 1/16W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R161	NRSA63J-332N	RESISTOR	3.3KΩ, 1/16W
	R162	NRSA63J-332N	RESISTOR	3.3KΩ, 1/16W
	R163	NRSA63J-332N	RESISTOR	3.3KΩ, 1/16W
	R164	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R165	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R166	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R167	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R168	NRSA63J-223N	RESISTOR	22KΩ, 1/16W
	R169	NRSA63J-183N	RESISTOR	18KΩ, 1/16W
	R170	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R171	NRSA63J-105N	RESISTOR	1MΩ, 1/16W
	R172	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R173	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R174	NRSA63J-153N	RESISTOR	15KΩ, 1/16W
	R175	NRSA63J-472N	RESISTOR	4.7KΩ, 1/16W
	R176	NRSA63J-474N	RESISTOR	470KΩ, 1/16W
	R177	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R178	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R180	NRSA63J-560N	RESISTOR	56Ω, 1/16W
	R181	NRSA63J-560N	RESISTOR	56Ω, 1/16W
	R182	NRSA63J-683N	RESISTOR	68KΩ, 1/16W
	R183	NRSA63J-183N	RESISTOR	18KΩ, 1/16W
	R184	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R185	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R186	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R190	NRSA63J-684N	RESISTOR	680KΩ, 1/16W
	R191	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R196	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R197	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R198	NRSA63J-220N	RESISTOR	22Ω, 1/16W
	R301	NRSA63J-302N	RESISTOR	3KΩ, 1/16W
	R303	NRSA63J-681N	RESISTOR	680Ω, 1/16W
	R305	NRSA63J-100N	RESISTOR	10Ω, 1/16W
	R306	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R307	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R308	NRSA63J-392N	RESISTOR	3.9KΩ, 1/16W
	R309	NVP1301-103N	V RESISTOR, PB AUDIO LEVEL	10KΩ
	R311	NRSA63J-124N	RESISTOR	120KΩ, 1/16W
	R312	NRSA63J-121N	RESISTOR	120Ω, 1/16W
	R313	NRSA63J-223N	RESISTOR	22KΩ, 1/16W
	R314	NRSA63J-470N	RESISTOR	47Ω, 1/16W
	R315	NRSA63J-185N	RESISTOR	1.8MΩ, 1/16W
	R316	NRSA63J-822N	RESISTOR	8.2KΩ, 1/16W
	R317	NRSA63J-223N	RESISTOR	22KΩ, 1/16W
	R318	NRSA63J-223N	RESISTOR	22KΩ, 1/16W
	R320	NRSA63J-471N	RESISTOR	470Ω, 1/16W
	R321	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R322	NRSA63J-121N	RESISTOR	120Ω, 1/16W
	R323	NRSA63J-273N	RESISTOR	27KΩ, 1/16W
	R324	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R325	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R326	NRSA63J-133N	RESISTOR	13KΩ, 1/16W
	R327	NRSA63J-123N	RESISTOR	12KΩ, 1/16W
	R328	NRSA63J-123N	RESISTOR	12KΩ, 1/16W
	R329	NRSA63J-123N	RESISTOR	12KΩ, 1/16W
	R330	NRSA63J-562N	RESISTOR	5.6KΩ, 1/16W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R331	NRSA63J-272N	RESISTOR	2.7KΩ, 1/16W
	R332	NRSA63J-221N	RESISTOR	220Ω, 1/16W
	R333	NRSA63J-124N	RESISTOR	120KΩ, 1/16W
	R334	NRSA63J-124N	RESISTOR	120KΩ, 1/16W
	R335	NRSA63J-4R7N	RESISTOR	4.7Ω, 1/16W
	R336	NRSA63J-4R7N	RESISTOR	4.7Ω, 1/16W
	R338	NRSA63J-221N	RESISTOR	220Ω, 1/16W
	R339	NRSA63J-221N	RESISTOR	220Ω, 1/16W
	R340	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R341	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R342	NVP1301-473N	V RESISTOR, BIAS LEVEL	47KΩ
	R344	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R345	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R346	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R347	NRSA63J-470N	RESISTOR	47Ω, 1/16W
	R349	NRVA62D-104N	RESISTOR	100KΩ, 1/16W
	R351	NRSA63J-472N	RESISTOR	4.7KΩ, 1/16W
	R352	NRVA62D-104N	RESISTOR	100KΩ, 1/16W
	R353	NRVA62D-513N	RESISTOR	51KΩ, 1/16W
	R355	NRSA63J-331N	RESISTOR	330Ω, 1/16W
	R358	NRVA62D-513N	RESISTOR	51KΩ, 1/16W
	R359	NRVA62D-243N	RESISTOR	24KΩ, 1/16W
	R361	NRSA63J-331N	RESISTOR	330Ω, 1/16W
	R362	NRSA63J-472N	RESISTOR	4.7KΩ, 1/16W
	R363	NRVA62D-513N	RESISTOR	51KΩ, 1/16W
	R365	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R366	NRSA63J-221N	RESISTOR	220Ω, 1/16W
	R368	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R372	NRSA63J-271N	RESISTOR	270Ω, 1/16W
	R373	NRSA63J-821N	RESISTOR	820Ω, 1/16W
	R401	NRSA63J-105N	RESISTOR	1MΩ, 1/16W
	R402	NRSA63J-153N	RESISTOR	15KΩ, 1/16W
	R403	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R404	NRSA63J-472N	RESISTOR	4.7KΩ, 1/16W
	R405	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R406	NRSA63J-472N	RESISTOR	4.7KΩ, 1/16W
	R407	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R408	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R409	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R410	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R411	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R412	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R413	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R414	NRSA63J-333N	RESISTOR	33KΩ, 1/16W
	R415	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R416	NRSA63J-823N	RESISTOR	82KΩ, 1/16W
	R417	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R418	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R419	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R420	NRSA63J-203N	RESISTOR	20KΩ, 1/16W
	R421	NRSA63J-203N	RESISTOR	20KΩ, 1/16W
	R422	NRSA63J-203N	RESISTOR	20KΩ, 1/16W
	R423	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R424	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R425	NRSA63J-203N	RESISTOR	20KΩ, 1/16W
	R426	NRSA63J-153N	RESISTOR	15KΩ, 1/16W
	R427	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R428	NRSA63J-105N	RESISTOR	1MΩ, 1/16W
	R429	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R430	NRSA63J-563N	RESISTOR	56KΩ, 1/16W
	R431	NRSA63J-472N	RESISTOR	4.7KΩ, 1/16W
	R432	NRSA63J-203N	RESISTOR	20KΩ, 1/16W
	R433	NRSA63J-203N	RESISTOR	20KΩ, 1/16W
	R434	NRSA63J-203N	RESISTOR	20KΩ, 1/16W
	R435	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R436	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R437	NRSA63J-203N	RESISTOR	20KΩ, 1/16W
	R438	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R439	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R440	NRVA62D-683N	RESISTOR	68KΩ, 1/16W
	R441	NRVA62D-103N	RESISTOR	10KΩ, 1/16W
	R442	NRVA62D-683N	RESISTOR	68KΩ, 1/16W
	R443	QRSA08J-0R0	RESISTOR	0Ω, 1/10W
	R444	NRSA63J-153N	RESISTOR	15KΩ, 1/16W
	R445	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R446	NRSA63J-153N	RESISTOR	15KΩ, 1/16W
	R447	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R448	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R450	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R451	NRSA63J-471N	RESISTOR	470Ω, 1/16W
	R452	NRSA63J-153N	RESISTOR	15KΩ, 1/16W
	R453	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R454	NRSA63J-153N	RESISTOR	15KΩ, 1/16W
	R455	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R456	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R457	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R458	NRSA63J-273N	RESISTOR	27KΩ, 1/16W
	R460	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R461	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R462	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R463	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R464	NRSA63J-271N	RESISTOR	270Ω, 1/16W
	R465	NRSA63J-332N	RESISTOR	3.3KΩ, 1/16W
	R466	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R467	NRSA63J-392N	RESISTOR	3.9KΩ, 1/16W
	R468	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R469	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R470	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R471	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R472	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R473	NRSA63J-153N	RESISTOR	15KΩ, 1/16W
	R474	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R475	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R476	NRSA63J-105N	RESISTOR	1MΩ, 1/16W
	R477	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R478	NRSA63J-472N	RESISTOR	4.7KΩ, 1/16W
	R479	NRSA63J-472N	RESISTOR	4.7KΩ, 1/16W
	R480	NRSA63J-105N	RESISTOR	1MΩ, 1/16W
	R481	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R482	NRSA63J-223N	RESISTOR	22KΩ, 1/16W
	R483	NRSA63J-103N	RESISTOR	10KΩ, 1/16W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R484	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R485	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R488	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R489	NRSA63J-105N	RESISTOR	1MΩ, 1/16W
	R491	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R492	NRSA63J-333N	RESISTOR	33KΩ, 1/16W
	R501	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R502	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R504	NRSA63J-153N	RESISTOR	15KΩ, 1/16W
	R505	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R506	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R507	NRSA63J-472N	RESISTOR	4.7KΩ, 1/16W
	R508	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R509	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R510	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R511	NRSA63J-332N	RESISTOR	3.3KΩ, 1/16W
	R512	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R514	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R516	NRSA63J-153N	RESISTOR	15KΩ, 1/16W
	B101	NRSA63J-0R0A	RESISTOR	
	B102	NRSA63J-0R0A	RESISTOR	
	B103	NRSA63J-0R0A	RESISTOR	
	B110	NRSA63J-0R0A	RESISTOR	
	C1	QEKA1CM-476	E CAPACITOR	47μF, 16V
	C2	QEKA1CM-476	E CAPACITOR	47μF, 16V
	C3	QEDF1CM-476	E CAPACITOR	47μF, 16V
	or	QED41CM-476	E CAPACITOR	47μF, 16V
	C4	QEDF1CM-476	E CAPACITOR	47μF, 16V
	or	QED41CM-476	E CAPACITOR	47μF, 16V
	C5	QEDF1AM-826	E CAPACITOR	82μF, 10V
	or	QED41AM-826	E CAPACITOR	82μF, 10V
	C6	QEDF1AM-826	E CAPACITOR	82μF, 10V
	or	QED41AM-826	E CAPACITOR	82μF, 10V
	C7	QEDF1AM-826	E CAPACITOR	82μF, 10V
	or	QED41AM-826	E CAPACITOR	82μF, 10V
	C8	QCY81EK-473Z	CAPACITOR	0.047μF, 25V
	or	QCY81EK-473	CAPACITOR	0.047μF, 25V
	C9	QEDF1AM-826	E CAPACITOR	82μF, 10V
	or	QED41AM-826	E CAPACITOR	82μF, 10V
	C10	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C15	QEF81EM-474	TANTAL CAPACITOR	0.47μF, 25V
	C16	QEEF1DM-226	TANTAL CAPACITOR	22μF, 20V
	or	QEE81DM-226	TANTAL CAPACITOR	22μF, 20V
	C101	QFZ9011-683Z	CAPASITOR	0.068μF
	C102	QFZ9011-683Z	CAPASITOR	0.068μF
	C103	NCB31HK-392A	CAPACITOR	0.0039μF, 50V
	C104	NCT06CH-270A	CAPACITOR	27PF
	C105	NCT06CH-270A	CAPACITOR	27PF
	C107	QERF1CM-106	E CAPACITOR	10μF, 16V
	C108	QCF81CZ-105	CAPACITOR	1μF, 16V
	C109	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C110	NCB31HK-562A	CAPACITOR	0.0056μF, 50V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C111	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C112	NCB31HK-102A	CAPACITOR	0.001μF, 50V
	C115	NCB31HK-222A	CAPACITOR	0.0022μF, 50V
	C116	QFZ9011-104Z	CAPACITOR	0.1μF
	C117	QENF1CM-106	E CAPACITOR	10μF, 16V
	C120	NCB31HK-222A	CAPACITOR	0.0022μF, 50V
	C121	QFZ0096-224Z	CAPASITOR	0.22μF
	C122	QENF1CM-106	E CAPACITOR	10μF, 16V
	C123	QCSA1HJ-102	CAPACITOR	0.001μF, 50V
	C124	QCSA1HJ-102	CAPACITOR	0.001μF, 50V
	C125	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C130	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C132	QCYA1HK-332	CAPACITOR	0.0033μF, 50V
	C133	QCYA1EK-223	CAPACITOR	0.022μF, 25V
	C134	QCYA1EK-223	CAPACITOR	0.022μF, 25V
	C135	QCYA1EK-223	CAPACITOR	0.022μF, 25V
	C136	QCF81CZ-105	CAPACITOR	1μF, 16V
	C137	QCF81CZ-105	CAPACITOR	1μF, 16V
	C138	NCB31HK-102A	CAPACITOR	0.001μF, 50V
	C140	NCF31CZ-104A	CAPACITOR	0.1μF, 16V
	C141	NCS31HJ-100A	CAPACITOR	10PF, 50V
	C142	NCF31CZ-104A	CAPACITOR	0.1μF, 16V
	C143	NCB31HK-102A	CAPACITOR	0.001μF, 50V
	C144	NCB31HK-471A	CAPACITOR	470PF, 50V
	C145	NCB31HK-102A	CAPACITOR	0.001μF, 50V
	C146	NCF31CZ-104A	CAPACITOR	0.1μF, 16V
	C148	NCB31HK-562A	CAPACITOR	0.0056μF, 50V
	C149	QCF81CZ-105	CAPACITOR	1μF, 16V
	C150	QCF81CZ-105	CAPACITOR	1μF, 16V
	C151	NCS31HJ-101A	CAPACITOR	100PF, 50V
	C155	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C156	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C157	QERF1AM-336	E CAPACITOR	33μF, 10V
	C158	QERF1AM-336	E CAPACITOR	33μF, 10V
	C159	QERF1AM-336	E CAPACITOR	33μF, 10V
	C160	QCF81CZ-105	CAPACITOR	1μF, 16V
	C161	QCYA1EK-223	CAPACITOR	0.022μF, 25V
	C162	QCYA1EK-223	CAPACITOR	0.022μF, 25V
	C163	QCYA1EK-223	CAPACITOR	0.022μF, 25V
	C165	QFZ9011-333Z	CAPASITOR	0.033μF
	C166	QCF81CZ-105	CAPACITOR	1μF, 16V
	C301	QERF1HM-474	E CAPACITOR	0.47μF, 50V
	C303	QERF1CM-106	E CAPACITOR	10μF, 16V
	C304	QERF1HM-224	E CAPACITOR	0.22μF, 50V
	C306	QERF0JM-336	E CAPACITOR	33μF, 6.3V
	C307	QERF1AM-226	E CAPACITOR	22μF, 10V
	C308	QCYA1EK-223	CAPACITOR	0.022μF, 25V
	C309	NCB31HK-681A	CAPACITOR	680PF, 50V
	C310	NCB31HK-272A	CAPACITOR	0.0027μF, 50V
	C311	QER41HM-105	E CAPACITOR	1μF, 50V
	C312	QERF0JM-336	E CAPACITOR	33μF, 6.3V
	C313	QENF0JM-226	E CAPACITOR	22μF, 6.3V
	C314	QERF1HM-105	E CAPACITOR	1μF, 50V
	C315	QERF1CM-106	E CAPACITOR	10μF, 16V
	C316	QERF1CM-106	E CAPACITOR	10μF, 16V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C318	QERF0JM-226	E CAPACITOR	22μF, 6.3V
	C319	QFJ41HJ-682	CAPASITOR	0.0068μF, 50V
	C320	QERF1HM-105	E CAPACITOR	1μF, 50V
	C322	NCB31HK-471A	CAPACITOR	470PF, 50V
	C323	NCB31HK-682A	CAPACITOR	0.0068μF, 50V
	C324	NCB31HK-682A	CAPACITOR	0.0068μF, 50V
	C325	QFZ9011-333Z	CAPACITOR	0.033μF
	C326	QERF1AM-476	E CAPACITOR	47μF, 10V
	C330	NCR31CK-223A	CAPACITOR	0.022μF, 16V
	C331	NCB31HK-122A	CAPACITOR	0.0012μF, 50V
	C332	NCB31HK-472A	CAPACITOR	0.0047μF, 50V
	C334	NCB31HK-682A	CAPACITOR	0.0068μF, 50V
	C336	NCB31HK-682A	CAPACITOR	0.0068μF, 50V
	C338	NCS31HJ-221A	CAPACITOR	220PF, 50V
	C340	NCT08CH-101A	CAPACITOR	100PF
	C341	NCT08CH-101A	CAPACITOR	100PF
	C342	NCT08CH-101A	CAPACITOR	100PF
	C343	NCT08CH-101A	CAPACITOR	100PF
	C344	NCT08CH-101A	CAPACITOR	100PF
	C345	NCT08CH-101A	CAPACITOR	100PF
	C346	NCT08CH-101A	CAPACITOR	100PF
	C347	NCT08CH-101A	CAPACITOR	100PF
	C401	QERF1EM-475	E CAPACITOR	4.7μF, 25V
	C402	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C403	QER41EM-475	E CAPACITOR	4.7μF, 25V
	C404	NCS31HJ-330A	CAPACITOR	33PF, 50V
	C405	NCS31HJ-330A	CAPACITOR	33PF, 50V
	C407	NCB31HK-332A	CAPACITOR	0.0033μF, 50V
	C408	NCB31HK-472A	CAPACITOR	0.0047μF, 50V
	C409	QCFA1EZ-333	CAPACITOR	0.033μF, 25V
	C411	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C412	QEF81CM-335	E CAPACITOR	3.3μF, 16V
	C413	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C414	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C415	YU40470-103	CAPACITOR	
		or QCVB1CM-103	CAPACITOR	0.01μF, 16V
	L1	PU56181-470	COIL	47μH
	L2	PU56181-470	COIL	47μH
	L3	YU41135-470	COIL	47μH
	L302	PU56197-2-P	EQUALIZER	
⚠	L303	YU41077	BIAS OSC COIL	
	L304	PU59188-221K	COIL	220μH
	L401	YU41135-470	COIL	47μH
⚠	CF401	YU40560	CRYSTAL RESONATOR	
⚠	X1	YU40404	CRYSTAL RESONATOR	
	DD1	YU40169-03	DC-DC CONVERTER	
	FT101	AFZ74A002A1	TRAP, TRAP101	
		or AFZ74A002X1	TRAP, TRAP101	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	HS1	YU40466-1-3	HEAT SINK
	SCW1	YQ40578	SCREW
	SLD1	YQ40890	SHEET
	SLD2	YQ41150	SHIELD PLATE
	SLD3	YU40467	INSULATOR
	TP1	YU40581	TEST PIN, REG 5V
	TP2	YU40581	TEST PIN, UNSW 5V
	TP3	YU40581	TEST PIN, REG 8V
	TP4	PU54983	TEST PIN, GND
	TP5	PU54983	TEST PIN, GND
	TP101	YU40581	TEST PIN, MODE 1
	TP104	YU40581	TEST PIN, CAP APC
	TP105	YU40581	TEST PIN, DRUM APC
	TP106	YU40581	TEST PIN, CTL DELAY
	TP107	YU40581	TEST PIN, CAP FG
	TP108	YU40581	TEST PIN, PB CTL PULSE
	TP109	YU40581	TEST PIN, PB FM OUT
	TP110	YU40581	TEST PIN, TEST
	TP111	YU40581	TEST PIN, DRUM FF
	TP302	YU40581	TEST PIN, AUDIO OUT
	TP303	YU40581	TEST PIN, BIAS SIG
	TP304	YU40581	TEST PIN, REC BIAS(−)
	CN1	YU40101-12	CAP HOUSING, (BOARD TO BOARD)
	CN2	YU40108-6	CAP HOUSING
	CN3	YU40773-14	CAP HOUSING, (BOARD TO BOARD)
	CN4	YU40683-16	CAP HOUSING, (BOARD TO BOARD)
	CN5	YU40096-4	CAP HOUSING
	CN6	YU40106-13	CAP HOUSING
	CN7	YU40106-10	CAP HOUSING
	CN8	YU40096-7	CAP HOUSING
	CN9	YU40096-6	CAP HOUSING
	CN10	YU40096-7	CAP HOUSING
	CN11	YU40096-3	CAP HOUSING
	CN12	YU40096-3	CAP HOUSING
	CN13	YU40096-9	CAP HOUSING
	CN14	YU40108-15	CAP HOUSING
	CN15	YU40102-14	CAP HOUSING, (BOARD TO BOARD)
	CN16	YU40102-8	CAP HOUSING, (BOARD TO BOARD)
	CN17	YU40102-10	CAP HOUSING, (BOARD TO BOARD)
⚠	CP1	ICP-F15	CIRCUIT PROTECTOR
⚠	CP2	ICP-F20	CIRCUIT PROTECTOR
⚠	CP3	ICP-F15	CIRCUIT PROTECTOR
⚠	CP4	ICP-F15	CIRCUIT PROTECTOR
⚠	CP5	ICP-F20	CIRCUIT PROTECTOR

— PRESUB BOARD ASSEMBLY —

PWBA	YB20234A	PRESUB BOARD ASSY

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	Q1	DTC144EU	TRANSISTOR	
	D1	DAP202U	DIODE	
	R1	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W

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7. Y/C BOARD ASSEMBLY ⟨02⟩

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	PWBA	YB10032D-C2	Y/C BOARD ASSY
	IC1	M52074FP	IC
	IC2	THE326A	IC
	IC3	MSM6847MS-XE1	IC
	IC4	H8D7102	IC
	IC5	BA7601K	IC
	IC6	H8D7103	IC
	IC7	LA7213	IC
	IC8	H8B7101A	IC
	IC9	H8D7098	IC
	IC10	H8D7046	IC
	IC11	MSM6829MS-XE1	IC
	IC12	NJM2246M	IC
	IC13	NJM2244M	IC
	IC14	NJM2244M	IC
	IC15	NJM2245M	IC
	IC16	NJM2234M	IC
	or	LA522F	IC
	IC17	AN3592S	IC
	or	AN3592S-X2	IC
	or	AN3592S	IC
	IC18	TME336A	IC
	Q1	DTC144EU	TRANSISTOR
	Q2	DTC144EU	TRANSISTOR
	Q3	DTC144EU	TRANSISTOR
	Q4	DTC144EU	TRANSISTOR
	Q5	2SA1576(QRS)	TRANSISTOR
	Q6	2SA1576(QRS)	TRANSISTOR
	Q7	2SC4081(QRS)	TRANSISTOR
	Q8	2SC4081(QRS)	TRANSISTOR
	Q9	DTC144EU	TRANSISTOR
	Q10	DTC144EU	TRANSISTOR
	Q11	2SC4081(QRS)	TRANSISTOR
	Q12	DTC144EU	TRANSISTOR
	Q13	2SA1576(QRS)	TRANSISTOR
	Q14	DTC144EU	TRANSISTOR
	Q15	DTC144EU	TRANSISTOR
	Q16	DTC124XU	TRANSISTOR
	Q17	DTC124XU	TRANSISTOR
	Q18	DTC124XU	TRANSISTOR
	Q19	DTC144EU	TRANSISTOR
	Q20	DTC144EU	TRANSISTOR
	Q21	DTC144EU	TRANSISTOR
	Q22	DTC144EU	TRANSISTOR
	Q23	2SC4081(QRS)	TRANSISTOR
	Q24	DTC144EU	TRANSISTOR
	Q25	2SC4081(QRS)	TRANSISTOR
	Q26	2SA1576(QRS)	TRANSISTOR
	Q27	2SC4081(QRS)	TRANSISTOR
	Q28	DTC144EU	TRANSISTOR
	Q29	DTC144EU	TRANSISTOR
	Q30	DTA144EU	TRANSISTOR
	Q31	DTA144EU	TRANSISTOR
	Q32	2SA1576(QRS)	TRANSISTOR
	Q33	2SC4081(QRS)	TRANSISTOR
	Q34	FMU1	TRANSISTOR
	Q35	2SC4081(QRS)	TRANSISTOR
	Q36	2SC4081(QRS)	TRANSISTOR
	Q37	DTC144EU	TRANSISTOR
	Q38	2SC4081(QRS)	TRANSISTOR
	Q39	2SC4081(QRS)	TRANSISTOR
	Q40	2SA1576(QRS)	TRANSISTOR
	Q41	2SA1576(QRS)	TRANSISTOR
	Q42	2SA1576(QRS)	TRANSISTOR
	Q43	2SC4081(QRS)	TRANSISTOR
	Q44	2SA1576(QRS)	TRANSISTOR
	Q45	2SA1576(QRS)	TRANSISTOR
	Q46	FMS2	TRANSISTOR
	Q48	DTC144EU	TRANSISTOR
	Q49	2SC4081(QRS)	TRANSISTOR
	Q50	2SC4081(QRS)	TRANSISTOR
	Q51	2SA1577(PQR)	TRANSISTOR
	Q52	2SA1577(PQR)	TRANSISTOR
	Q53	2SA1577(PQR)	TRANSISTOR
	Q54	2SA1577(PQR)	TRANSISTOR
	Q55	DTC144EU	TRANSISTOR
	Q56	FMQ1	TRANSISTOR
	Q57	DTC144EU	TRANSISTOR
	Q58	DTC144EU	TRANSISTOR
	Q59	2SC4081(QRS)	TRANSISTOR
	Q60	2SC4081(QRS)	TRANSISTOR
	Q61	2SC4081(QRS)	TRANSISTOR
	Q62	2SA1576(QRS)	TRANSISTOR
	Q63	2SC4081(QRS)	TRANSISTOR
	Q64	2SC4081(QRS)	TRANSISTOR
	Q65	2SC4081(QRS)	TRANSISTOR
	Q66	DTC144EU	TRANSISTOR
	Q67	DTC144EU	TRANSISTOR
	Q68	DTC144EU	TRANSISTOR
	Q69	DTC144EU	TRANSISTOR
	Q71	DTC144EU	TRANSISTOR
	Q72	DTC144EU	TRANSISTOR
	Q73	2SC4081(QRS)	TRANSISTOR
	Q74	DTA144EU	TRANSISTOR
	Q75	2SA1576(QRS)	TRANSISTOR
	Q76	2SC4081(QRS)	TRANSISTOR

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	Q77	DTC144EU	TRANSISTOR	
	Q78	DTC144EU	TRANSISTOR	
	Q79	DTC144EU	TRANSISTOR	
	Q80	2SA1576(QRS)	TRANSISTOR	
	Q81	DTC144EU	TRANSISTOR	
	D1	DAN202U	DIODE	
	D2	RB451F	DIODE	
	D3	DAP202U	DIODE	
	D4	DAP202U	DIODE	
	D5	DAN202U	DIODE	
	D6	DAN202U	DIODE	
	D7	DAN202U	DIODE	
	D9	DAN202U	DIODE	
	D10	DAN202U	DIODE	
	D11	DAN202U	DIODE	
	D12	DAN202U	DIODE	
	D13	DAP202U	DIODE	
	D14	DAN202U	DIODE	
	D15	DAN202U	DIODE	
	D16	DAN202U	DIODE	
	D17	DAN202U	DIODE	
	D18	DAP202U	DIODE	
	D19	DAN202U	DIODE	
	D20	DAN202U	DIODE	
	D21	DAN202U	DIODE	
	D22	DAN202U	DIODE	
	D23	DAP202U	DIODE	
	D24	DAN202U	DIODE	
	D25	DAN202U	DIODE	
	D26	DAP202U	DIODE	
	D27	DA204U	DIODE	
	D28	DA204U	DIODE	
	D29	DA204U	DIODE	
	D30	DA204U	DIODE	
	D31	DAP202U	DIODE	
	D32	DAN202U	DIODE	
	D33	DAN202U	DIODE	
	R1	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R2	NRSA63J-122N	RESISTOR	1.2KΩ, 1/16W
	R3	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R4	NRSA63J-155N	RESISTOR	1.5MΩ, 1/16W
	R5	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R6	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R7	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R8	NRSA63J-821N	RESISTOR	820Ω, 1/16W
	R9	NRSA63J-471N	RESISTOR	470Ω, 1/16W
	R10	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R11	NRSA63J-391N	RESISTOR	390Ω, 1/16W
	R12	NRSA63J-391N	RESISTOR	390Ω, 1/16W
	R13	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R14	NRSA63J-821N	RESISTOR	820Ω, 1/16W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R15	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R16	NRSA63J-122N	RESISTOR	1.2KΩ, 1/16W
	R17	NRSA63J-182N	RESISTOR	1.8KΩ, 1/16W
	R18	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R19	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R20	NRSA63J-561N	RESISTOR	560Ω, 1/16W
	R21	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R22	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R23	NRSA63J-681N	RESISTOR	680Ω, 1/16W
	R24	NRSA63J-272N	RESISTOR	2.7KΩ, 1/16W
	R25	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R26	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R27	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R28	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R29	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R30	NRSA63J-562N	RESISTOR	5.6KΩ, 1/16W
	R31	NRSA63J-122N	RESISTOR	1.2KΩ, 1/16W
	R32	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R33	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R34	NRSA63J-272N	RESISTOR	2.7KΩ, 1/16W
	R35	NRSA63J-105N	RESISTOR	1MΩ, 1/16W
	R36	NRSA63J-272N	RESISTOR	2.7KΩ, 1/16W
	R37	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R38	NRSA63J-562N	RESISTOR	5.6KΩ, 1/16W
	R39	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R40	NRSA63J-562N	RESISTOR	5.6KΩ, 1/16W
	R41	NRSA63J-562N	RESISTOR	5.6KΩ, 1/16W
	R42	NRSA63J-681N	RESISTOR	680Ω, 1/16W
	R43	NRSA63J-392N	RESISTOR	3.9KΩ, 1/16W
	R44	NRSA63J-122N	RESISTOR	1.2KΩ, 1/16W
	R45	NRSA63J-333N	RESISTOR	33KΩ, 1/16W
	R46	NRSA63J-333N	RESISTOR	33KΩ, 1/16W
	R47	NRSA63J-272N	RESISTOR	2.7KΩ, 1/16W
	R48	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R49	NRSA63J-333N	RESISTOR	33KΩ, 1/16W
	R50	NRSA63J-125N	RESISTOR	1.2MΩ, 1/16W
	R51	NRSA63J-472N	RESISTOR	4.7KΩ, 1/16W
	R52	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R53	NRSA63J-123N	RESISTOR	12KΩ, 1/16W
	R54	NRSA63J-181N	RESISTOR	180Ω, 1/16W
	R55	NRSA63J-333N	RESISTOR	33KΩ, 1/16W
	R56	NRSA63J-221N	RESISTOR	220Ω, 1/16W
	R57	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R58	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R59	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R60	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R61	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R62	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R63	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R65	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R66	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R68	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R69	NRSA63J-821N	RESISTOR	820Ω, 1/16W
	R70	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R71	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R72	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R73	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R74	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R75	NRSA63J-122N	RESISTOR	1.2KΩ, 1/16W
	R77	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R78	NRSA63J-332N	RESISTOR	3.3KΩ, 1/16W
	R79	NRSA63J-821N	RESISTOR	820Ω, 1/16W
	R80	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R81	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R82	NRSA63J-272N	RESISTOR	2.7KΩ, 1/16W
	R83	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R85	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R86	NRSA63J-182N	RESISTOR	1.8KΩ, 1/16W
	R87	NRSA63J-821N	RESISTOR	820Ω, 1/16W
	R88	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R89	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R90	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R91	NRSA63J-562N	RESISTOR	5.6KΩ, 1/16W
	R92	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R93	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R94	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R95	NRSA63J-681N	RESISTOR	680Ω, 1/16W
	R96	NRSA63J-331N	RESISTOR	330Ω, 1/16W
	R97	NRSA63J-121N	RESISTOR	120Ω, 1/16W
	R101	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R102	NRSA63J-821N	RESISTOR	820Ω, 1/16W
	R103	NRSA63J-472N	RESISTOR	4.7KΩ, 1/16W
	R104	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R105	NRSA63J-393N	RESISTOR	39KΩ, 1/16W
	R106	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R107	NRSA63J-331N	RESISTOR	330Ω, 1/16W
	R108	NRSA63J-224N	RESISTOR	220KΩ, 1/16W
	R109	NRSA63J-472N	RESISTOR	4.7KΩ, 1/16W
	R110	NRSA63J-472N	RESISTOR	4.7KΩ, 1/16W
	R111	NRSA63J-122N	RESISTOR	1.2KΩ, 1/16W
	R112	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R113	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R114	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R115	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R116	NRSA63J-471N	RESISTOR	470Ω, 1/16W
	R117	NRSA63J-122N	RESISTOR	1.2KΩ, 1/16W
	R118	NRSA63J-122N	RESISTOR	1.2KΩ, 1/16W
	R119	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R120	NRSA63J-333N	RESISTOR	33KΩ, 1/16W
	R121	NRSA63J-333N	RESISTOR	33KΩ, 1/16W
	R122	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R123	NRSA63J-333N	RESISTOR	33KΩ, 1/16W
	R124	NRSA63J-333N	RESISTOR	33KΩ, 1/16W
	R125	NRSA63J-471N	RESISTOR	470Ω, 1/16W
	R126	QRSA08J-472	RESISTOR	4.7KΩ, 1/10W
	R127	NRSA63J-183N	RESISTOR	18KΩ, 1/16W
	R128	NRSA63J-332N	RESISTOR	3.3KΩ, 1/16W
	R131	NRSA63J-272N	RESISTOR	2.7KΩ, 1/16W
	R132	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R133	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R134	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R135	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R136	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R137	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R138	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R139	NRSA63J-561N	RESISTOR	560Ω, 1/16W
	R140	NRSA63J-392N	RESISTOR	3.9KΩ, 1/16W
	R141	NRSA63J-821N	RESISTOR	820Ω, 1/16W
	R142	NRSA63J-561N	RESISTOR	560Ω, 1/16W
	R143	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R144	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R145	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R146	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R147	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R148	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R149	NRSA63J-681N	RESISTOR	680Ω, 1/16W
	R150	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R151	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R152	NRSA63J-472N	RESISTOR	4.7KΩ, 1/16W
	R153	NRSA63J-223N	RESISTOR	22KΩ, 1/16W
	R154	NRSA63J-273N	RESISTOR	27KΩ, 1/16W
	R155	NRSA63J-273N	RESISTOR	27KΩ, 1/16W
	R156	NRSA63J-223N	RESISTOR	22KΩ, 1/16W
	R157	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R158	NRSA63J-562N	RESISTOR	5.6KΩ, 1/16W
	R159	NRSA63J-562N	RESISTOR	5.6KΩ, 1/16W
	R160	QRD162J-681	RESISTOR	680Ω, 1/6W
	R161	QRD162J-681	RESISTOR	680Ω, 1/6W
	R162	NRSA63J-333N	RESISTOR	33KΩ, 1/16W
	R163	NRSA63J-333N	RESISTOR	33KΩ, 1/16W
	R164	QRD162J-681	RESISTOR	680Ω, 1/6W
	R165	QRD162J-681	RESISTOR	680Ω, 1/6W
	R166	NRSA63J-332N	RESISTOR	3.3KΩ, 1/16W
	R167	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R168	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R169	NRSA63J-332N	RESISTOR	3.3KΩ, 1/16W
	R170	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R171	NRSA63J-332N	RESISTOR	3.3KΩ, 1/16W
	R172	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R173	NRSA63J-332N	RESISTOR	3.3KΩ, 1/16W
	R174	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R175	NRSA63J-822N	RESISTOR	8.2KΩ, 1/16W
	R176	NRSA63J-151N	RESISTOR	150Ω, 1/16W
	R177	NRSA63J-151N	RESISTOR	150Ω, 1/16W
	R181	QRSA08J-152	RESISTOR	1.5KΩ, 1/10W
	R182	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R183	NRSA63J-272N	RESISTOR	2.7KΩ, 1/16W
	R184	NRSA63J-681N	RESISTOR	680Ω, 1/16W
	R185	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R186	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R187	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R188	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R189	NRSA63J-123N	RESISTOR	12KΩ, 1/16W
	R190	NRSA63J-391N	RESISTOR	390Ω, 1/16W
	R191	NRSA63J-332N	RESISTOR	3.3KΩ, 1/16W
	R192	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R194	NRSA63J-182N	RESISTOR	1.8KΩ, 1/16W
	R195	NRSA63J-393N	RESISTOR	39KΩ, 1/16W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R196	NRSA63J-122N	RESISTOR	1.2KΩ, 1/16W
	R197	NRSA63J-223N	RESISTOR	22KΩ, 1/16W
	R198	NRSA63J-471N	RESISTOR	470Ω, 1/16W
	R199	NRSA63J-223N	RESISTOR	22KΩ, 1/16W
	R200	NRSA63J-393N	RESISTOR	39KΩ, 1/16W
	R202	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R203	NRSA63J-563N	RESISTOR	56KΩ, 1/16W
	R204	NRSA63J-221N	RESISTOR	220Ω, 1/16W
	R205	NRSA63J-154N	RESISTOR	150KΩ, 1/16W
	R206	NRSA63J-472N	RESISTOR	4.7KΩ, 1/16W
	R207	NRSA63J-223N	RESISTOR	22KΩ, 1/16W
	R208	NRSA63J-101N	RESISTOR	100Ω, 1/16W
	R213	NRSA63J-153N	RESISTOR	15KΩ, 1/16W
	R214	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R216	QRSA08J-103Y	RESISTOR	10KΩ, 1/10W
	R217	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R218	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R219	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R401	NVP1301-123N	V RESISTOR, EE Y LEVEL	12KΩ
	R402	NVP1301-103N	V RESISTOR, S DARK CLIP	10KΩ
	R403	NVP1301-102N	V RESISTOR, N DARK CLIP	1KΩ
	R404	NVP1301-123N	V RESISTOR, N WHITE CLIP	12KΩ
	R405	NVP1301-222N	V RESISTOR, S WHITE CLIP	2.2KΩ
	R406	NVP1301-102N	V RESISTOR, YNR SUB S INPUT LEVEL	1KΩ
	R407	NVP1301-782N	V RESISTOR, N DEVIATION	7.8KΩ
	R408	NVP1301-622N	V RESISTOR, S DEVIATION	6.2KΩ
	R409	NVP1301-203N	V RESISTOR, S CARRIER	20KΩ
	R410	NVP1301-333N	V RESISTOR, N CARRIER	33KΩ
	R411	NVP1301-332N	V RESISTOR, N REC FM	3.3KΩ
	R412	NVP1301-681N	V RESISTOR, S REC FM	680Ω
	R413	NVP1301-153N	V RESISTOR, N PB Y LEVEL	15KΩ
	R414	NVP1301-223N	V RESISTOR, S PB Y LEVEL	22KΩ
	R415	NVP1301-152N	V RESISTOR, N L EMPHASIS INPUT LEVEL	1.5KΩ
	R416	NVP1301-472N	V RESISTOR, SP N VIDEO RF EQ	4.7KΩ
	R417	NVP1301-472N	V RESISTOR, LP N VIDEO RF EQ	4.7KΩ
	R418	NVP1301-472N	V RESISTOR, S LP VIDEO RF EQ	4.7KΩ
	R419	NVP1301-103N	V RESISTOR, S SP VIDEO RF EQ	10KΩ
	R420	NVP1301-331N	V RESISTOR, S REC COLOR LEVEL	330Ω
	R421	NVP1301-473N	V RESISTOR, PILOT BURST LEVEL	47KΩ
	R422	NVP1301-222N	V RESISTOR, BURST LEVEL	2.2KΩ
	R423	NVP1301-623N	V RESISTOR, 321 FH VCO	62KΩ
	R424	NVP1301-102N	V RESISTOR, PB COLOR LEVEL	1KΩ
	R425	NVP1301-222N	V RESISTOR, 0.5H DELAY LEVEL	2.2KΩ
	R426	NVP1301-222N	V RESISTOR	2.2KΩ
	R427	NVP1301-273N	V RESISTOR, N PB ACC INPUT LEVEL	27KΩ
	C1	NEH11HM-474N	E CAPACITOR	0.47μF, 50V
	C2	NEH11EM-475N	E CAPACITOR	4.7μF, 25V
	C3	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C4	YU40688-476N	E CAPACITOR	47μF, 5.5V
	C5	NEH10JM-226N	E CAPACITOR	22μF, 6.3V
	C6	YU40688-476N	E CAPACITOR	47μF, 5.5V
	C7	NCS31HJ-390A	CAPACITOR	39PF, 50V
	C8	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C9	NCB31EK-103A	CAPACITOR	0.01μF, 25V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C10	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C11	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C12	QEF81CM-105	TANTAL CAPACITOR	1μF, 16V
	C13	NEH11EM-475N	E CAPACITOR	4.7μF, 25V
	C14	NEH11CM-106N	E CAPACITOR	10μF, 16V
	C15	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C16	YU40688-476N	E CAPACITOR	
	C17	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C18	NCB31CK-223A	CAPACITOR	0.022μF, 16V
	C19	NEH11HM-474N	E CAPACITOR	0.47μF, 50V
	C20	NCS31HJ-121A	CAPACITOR	120PF, 50V
	C21	QEF81EM-474	TANTAL CAPACITOR	0.47μF, 25V
	C22	NEH11CM-106N	E CAPACITOR	10μF, 16V
	C23	QEF81EM-474	TANTAL CAPACITOR	0.47μF, 25V
	C24	NEH11EM-475N	E CAPACITOR	4.7μF, 25V
	C25	NCS31HJ-151A	CAPACITOR	150PF, 50V
	C26	NCS31HJ-330A	CAPACITOR	33PF, 50V
	C28	NCB31HK-391A	CAPACITOR	390PF, 50V
	C30	YU40688-476N	E CAPACITOR	
	C31	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C32	NEH11HM-224N	E CAPACITOR	0.22μF, 50V
	C33	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C34	NCS31HJ-9R0A	CAPACITOR	9PF, 50V
	C35	NCS31HJ-270A	CAPACITOR	27PF, 50V
	C36	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C37	YU40688-476N	E CAPACITOR	
	C38	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C39	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C40	YU40688-476N	E CAPACITOR	
	C41	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C42	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C43	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C44	NCS31HJ-150A	CAPACITOR	15PF, 50V
	C45	NCS31HJ-560A	CAPACITOR	56PF, 50V
	C46	NCB31HK-331A	CAPACITOR	330PF, 50V
	C47	NCS31HJ-271A	CAPACITOR	270PF, 50V
	C48	NCS31HJ-151A	CAPACITOR	150PF, 50V
	C49	NEH11HM-474N	E CAPACITOR	0.47μF, 50V
	C50	NEH11HM-474N	E CAPACITOR	0.47μF, 50V
	C51	NCS31HJ-330A	CAPACITOR	33PF, 50V
	C52	NCS31HJ-270A	CAPACITOR	27PF, 50V
	C53	NEH11EM-475N	E CAPACITOR	4.7μF, 25V
	C55	YU40688-476N	E CAPACITOR	
	C56	NEH10JM-226N	E CAPACITOR	22μF, 6.3V
	C61	NCS31HJ-270A	CAPACITOR	27PF, 50V
	C62	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C63	NCS31HJ-180A	CAPACITOR	18PF, 50V
	C65	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C66	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C67	YU40688-476N	E CAPACITOR	
	C68	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C69	NCS31HJ-220A	CAPACITOR	22PF, 50V
	C70	NCS31HJ-181A	CAPACITOR	180PF, 50V
	C71	NCS31HJ-220A	CAPACITOR	22PF, 50V
	C72	NCS31HJ-390A	CAPACITOR	39PF, 50V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C73	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C74	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C75	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C76	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C77	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C78	NCS31HJ-180A	CAPACITOR	18PF, 50V
	C79	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C80	NCS31HJ-470A	CAPACITOR	47PF, 50V
	C81	NCS31HJ-220A	CAPACITOR	22PF, 50V
	C82	NCS31HJ-470A	CAPACITOR	47PF, 50V
	C83	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C84	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C85	NCS31HJ-560A	CAPACITOR	56PF, 50V
	C86	NCS31HJ-8R0A	CAPACITOR	8PF, 50V
	C87	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C88	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C89	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C90	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C91	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C92	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C93	YU40688-476N	E CAPACITOR	
	C94	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C95	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C97	QCYA1HK-223	CAPACITOR	0.022μF, 50V
	C98	QCYA1HK-223	CAPACITOR	0.022μF, 50V
	C99	NCS31HJ-220A	CAPACITOR	22PF, 50V
	C100	NCS31HJ-270A	CAPACITOR	27PF, 50V
	C101	QEF81CM-335	E CAPACITOR	3.3μF, 16V
	C102	YU40688-476N	E CAPACITOR	
	C103	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C104	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C105	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C106	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C107	PU56274-250	TRIMMER CAPACITOR, PILOT BURST PHASE	25PF
	C108	NCS31HJ-220A	CAPACITOR	22PF, 50V
	C109	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C110	PU56274-200	TRIMMER CAPACITOR, VXO FREQ EQ	20PF
	C111	NCR21CK-473A	CAPACITOR	0.047μF, 16V
	C112	QEF80JM-476	TANTAL CAPACITOR	47μF, 6.3V
	C113	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C114	QEF80JM-476	TANTAL CAPACITOR	47μF, 6.3V
	C115	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C116	NCB31HK-102A	CAPACITOR	0.001μF, 50V
	C117	QCYA1HK-333	CAPACITOR	0.033μF, 50V
	C118	QCYA1HK-333	CAPACITOR	0.033μF, 50V
	C119	NRSA63J-392N	RESISTOR	3.9KΩ, 1/16W
	C121	NCB31HK-102A	CAPACITOR	0.001μF, 50V
	C122	YU40688-476N	E CAPACITOR	47μF, 5.5V
	C123	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C124	NEH11CM-106N	E CAPACITOR	10μF, 16V
	C125	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C126	NEH11EM-475N	E CAPACITOR	4.7μF, 25V
	C127	NEH11EM-475N	E CAPACITOR	4.7μF, 25V
	C128	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C129	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C130	NCS31HJ-120A	CAPACITOR	12PF, 50V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C131	NEH11HM-104N	E CAPACITOR	1μF, 50V
	C132	NEH11CM-106N	E CAPACITOR	10μF, 16V
	C133	NEH11CM-106N	E CAPACITOR	10μF, 16V
	C134	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C135	NEH11CM-106N	E CAPACITOR	10μF, 16V
	C136	NEH11CM-106N	E CAPACITOR	10μF, 16V
	C137	NEH11CM-106N	E CAPACITOR	10μF, 16V
	C138	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C139	NEH11CM-106N	E CAPACITOR	10μF, 16V
	C140	NEH11CM-106N	E CAPACITOR	10μF, 16V
	C141	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C142	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C143	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C144	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C145	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C146	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C147	NEH11CM-106N	E CAPACITOR	10μF, 16V
	C148	NCS31HJ-4R0A	CAPACITOR	4PF, 50V
	C151	NEH11CM-106N	E CAPACITOR	10μF, 16V
	C152	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C153	NEH11CM-106N	E CAPACITOR	10μF, 16V
	C154	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C155	NEH11CM-106N	E CAPACITOR	10μF, 16V
	C156	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C157	NEH11CM-106N	E CAPACITOR	10μF, 16V
	C158	QEKA0HM-477	E CAPACITOR	470μF, 5.5V
	C159	QEKA0HM-477	E CAPACITOR	470μF, 5.5V
	C160	QEKA0HM-477	E CAPACITOR	470μF, 5.5V
	C161	QEKA0HM-477	E CAPACITOR	470μF, 5.5V
	C162	NEH11CM-106N	E CAPACITOR	10μF, 16V
	C163	NCS31HJ-120A	CAPACITOR	12PF, 50V
	C171	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C172	NCS31HJ-220A	CAPACITOR	22PF, 50V
	C173	NCS31HJ-220A	CAPACITOR	22PF, 50V
	C174	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C175	NEH11HM-105N	E CAPACITOR	1μF, 50V
	C176	NEH11HM-105N	E CAPACITOR	1μF, 50V
	C177	NEH11EM-475N	E CAPACITOR	4.7μF, 25V
	C178	NCB31HK-332A	CAPACITOR	0.0033μF, 50V
	C179	NEH11HM-105N	E CAPACITOR	1μF, 50V
	C180	NCB31HK-152A	CAPACITOR	0.0015μF, 50V
	C181	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C182	NCR31CK-223A	CAPACITOR	0.022μF, 16V
	C183	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C184	NCS31HJ-101A	CAPACITOR	100PF, 50V
	C185	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C186	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C187	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C188	NEH11HM-105N	E CAPACITOR	1μF, 50V
	C189	QFN41HJ-222	CAPASITOR	0.0022μF, 50V
	C190	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C191	NCB31HK-222A	CAPACITOR	0.0022μF, 50V
	C192	YU40688-476N	E CAPACITOR	47μF, 5.5V
	C193	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C194	NCB31EK-103A	CAPACITOR	0.01μF, 25V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C201	NCS31HJ-560A	CAPACITOR	56PF, 50V
	C202	NCS31HJ-180A	CAPACITOR	18PF, 50V
	C203	NCS31HJ-100A	CAPACITOR	10PF, 50V
	C205	NCS31HJ-8R0A	CAPACITOR	8PF, 50V
	C210	QCFA1EZ-333	CAPACITOR	0.033μF, 25V
	C211	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C214	NCS31HJ-8R0A	CAPACITOR	8PF, 50V
	C217	NCS31HJ-820A	CAPACITOR	82PF, 50V
	C218	QCFA1EZ-333	CAPACITOR	0.033μF, 25V
	L1	YU41135-470	COIL	47μH
	L2	YU41135-470	COIL	47μH
	L3	YU41135-470	COIL	47μH
	L4	YU41135-470	COIL	47μH
	L5	YU41135-470	COIL	47μH
	L6	PU58201-120J	COIL	12μH
	or	YU40249-120J	COIL	12μH
	L8	YU41135-470	COIL	47μH
	L9	YU41135-470	COIL	47μH
	L10	PU58201-220J	COIL	22μH
	or	YU40249-220J	COIL	22μH
	L11	YU40249-330J	COIL	33μH
	L13	YU40249-390J	COIL	39μH
	L14	YU40249-101J	COIL	100μH
	L15	YU40249-820J	COIL	82μH
	L16	YU40249-100J	COIL	10μH
	L17	YU40249-100J	COIL	10μH
	L18	YU40249-330J	COIL	33μH
	L19	YU40249-220J	COIL	22μH
	L20	YU40249-120J	COIL	12μH
	L21	YU40249-560J	COIL	56μH
	L22	QRS188J-0R0Y	RESISTOR	0Ω, 1/8W
	L23	YU40249-100J	COIL	10μH
	L24	YU41135-470	COIL	47μH
	L25	YU41135-470	COIL	47μH
	L26	YU41135-470	COIL	47μH
	L27	PU58201-330J	COIL	33μH
	L28	PU58201-470J	COIL	47μH
	L29	PU53607-822	COIL	8.2mH
	L30	YU41135-470	COIL	47μH
	L31	YU41135-470	COIL	47μH
	L32	YU41135-470	COIL	47μH
	L33	YU41135-470	COIL	47μH
	L35	PU58201-6R8K	COIL	6.8μH
	or	YU40249-6R8K	COIL	6.8μH
	L36	PU58201-270J	COIL	27μH
	or	YU40249-270J	COIL	27μH
	L37	YU41135-470	COIL	47μH
	L38	YU41135-470	COIL	47μH
	L39	YU41135-470	COIL	47μH
	L40	YU41135-470	COIL	47μH
	L41	YU41135-470	COIL	47μH
	L42	YU41135-470	COIL	47μH

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	L44	PU58201-330J	COIL	33μH
	or	YU40249-330J	COIL	33μH
	L45	YU40249-100J	COIL	10μH
	or	PU58201-100J	COIL	10μH
	L46	PU55843-102K	COIL	1mH
	or	PU57620-102K	COIL	1mH
	L47	YU40249-331J	COIL	330μH
	L50	YU40249-331J	COIL	330μH
	L51	YU40249-331J	COIL	330μH
	EQ1	YU40751	EQUALIZER	
	EQ3	PU59031	FH TRAP COIL	
	LPF1	YU40224-2	LOW PASS FILTER	
	or	YU41143	LOW PASS FILTER, 5MHZ	
	LPF2	YU40747	LOW PASS FILTER	
	LPF3	YU40748	LOW PASS FILTER	
	LPF4	YU40749	LOW PASS FILTER	
	LPF5	YU40750	LOW PASS FILTER	
	LPF6	YU41420	LOW PASS FILTER	
	or	YU41630-R	LOW PASS FILTER	
	LPF7	YU40836	LOW PASS FILTER	
	BPF1	YU40503	BAND PASS FILTER	
	BPF2	YU40504	BAND PASS FILTER	
	BPF3	YU40837	BAND PASS FILTER	
	HPF1	YU40552	HIGH PASS FILTER, N-REC(1.7MHZ)	
	or	YU40481-Z	HIGH PASS FILTER	
	DL1	YU40948-2	2H DELAY LINE	
⚠	X1	YU41219	CRYSTAL RESONATOR	
	SW1	YU40236	SLIDE SWITCH, S-VHS SW	
	SW2	YU40236	SLIDE SWITCH, VIDEO OUT SW	
	SPC1	YQ40433-1-2	DUST SPACER	
	TP2	YU40581	TEST PIN, N L EMPHASIS IN LEVEL	
	TP3	YU40581	TEST PIN, N L EMPHASIS OUT LEVEL	
	TP4	YU40581	TEST PIN, MAIN EMPHASIS OUT LEVEL	
	TP5	YU40581	TEST PIN, REC FM OUT LEVEL	
	TP6	YU40581	TEST PIN, COLOR SYNC LEVEL	
	TP8	YU40581	TEST PIN, PILOT BURST LEVEL	
	TP9	YU40581	TEST PIN, PB COLOR OUT LEVEL	
	TP10	PU56278	TEST PIN, SIGNAL GND	
	TP11	YU40581	TEST PIN, VCO FREQ	
	TP12	YU40581	TEST PIN, VXO OUT	
	TP13	YU40581	TEST PIN, SUB CONVERTOR OUT	
	TP14	YU40581	TEST PIN, PB COLOR IN LEVEL	
	TP15	YU40581	TEST PIN, 0.5H DELAY LEVEL	
	TP16	YU40581	TEST PIN, COLOR OUT 1	
	TP17	YU40581	TEST PIN, COLOR OUT 2	
	TP18	YU40581	TEST PIN, Y OUT LEVEL	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	TP19	YU40581	TEST PIN, VIDEO OUT LEVEL	
	TP20	YU40581	TEST PIN, SHORT (A)	
	TP21	YU40581	TEST PIN, SHORT (B)	
	TP22	YU40581	TEST PIN, 7.8KHZ TUNING	
	TP23	YU40581	TEST PIN, 0.5H DET	
	TP24	YU40581	TEST PIN, PB ACC IN	
	TP25	PU56278	TEST PIN, GND	
	TP26	YU40581	TEST PIN, D FF	
	TP27	YU40581	TEST PIN, YNR MS INPUT LEVEL	
	TP28	YU40581	TEST PIN, N E LIM BAL VCC	
	TP29	YU40581	TEST PIN, 0.5H REF LEVEL	
	TP30	YU40581	TEST PIN, PB 5V	
	CN1	YU40105-14	CAP HOUSING, (BOARD TO BOARD)	
	CN2	YU40684-10	CAP HOUSING, (BOARD TO BOARD)	
	CN3	YU40105-8	CAP HOUSING, (BOARD TO BOARD)	
	CN4	YU40105-10	CAP HOUSING, (BOARD TO BOARD)	
	CN5	YU40095-4	CAP HOUSING	
	CN6	YU40095-2	CAP HOUSING	
	CN7	YU40095-2	CAP HOUSING	

— Y/C SUB BOARD ASSEMBLY —

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	YB20387A	Y/C SUB BOARD ASSY	
	Q301	2SC2412K	TRANSISTOR	
	Q302	2SC2412K	TRANSISTOR	
	D34	DAN202K	DIODE	
	R215	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
	R301	QRSA08J-472YN	RESISTOR	4.7KΩ, 1/10W
	R302	QRSA08J-182YN	RESISTOR	1.8KΩ, 1/10W
	R303	QRSA08J-152YN	RESISTOR	1.5KΩ, 1/10W
	R304	QRSA08J-471YN	RESISTOR	470Ω, 1/10W
	R305	QRSA08J-271YN	RESISTOR	270Ω, 1/10W
	R306	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
	C221	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C301	QCYA1HK-102	CAPACITOR	0.001μF, 50V
	C302	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C303	QCSA1HJ-120	CAPACITOR	12PF, 50V
	L34	PU58201-270J	COIL	27μH
		or YU40249-270J	COIL	27μH
	L43	YU41135-470K	COIL	47μH
	L301	YU40249-101J	COIL	100μH

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8. DRUM MDA BOARD ASSEMBLY ⟨03⟩

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	YB20103B	DRUM MDA BOARD ASSY	
	IC1	BA6452F	IC	
	D1	MA141WK	DIODE	
	R1	QRSA08J-102	RESISTOR	1KΩ, 1/10W
	R2	QRSA08J-104	RESISTOR	100KΩ, 1/10W
	R3	QRSA08J-153	RESISTOR	15KΩ, 1/10W
	R4	QRSA08J-222	RESISTOR	2.2KΩ, 1/10W
	R5	QRSA08J-121	RESISTOR	120Ω, 1/10W
	R6	QRSA08K-2R2	RESISTOR	2.2Ω, 1/10W
	R7	QRSA08K-2R2	RESISTOR	2.2Ω, 1/10W
	R8	QRSA08K-2R2	RESISTOR	2.2Ω, 1/10W
	R9	QRSA08J-104	RESISTOR	100KΩ, 1/10W
	R10	QRSA08J-0R0Y	RESISTOR	0Ω, 1/10W
	R11	QRG12BJ-R68AR	RESISTOR	0.68Ω, 1/2W
	C1	QCY81EK-104	CAPACITOR	0.1μF, 25V
	C2	QCYA1HK-471	CAPACITOR	470PF, 50V
	C3	QCY81CK-224	CAPACITOR	0.22μF, 16V
	C4	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C5	QCYA1EK-223	CAPACITOR	0.022μF, 25V
	C6	QERF1CM-106	E CAPACITOR	10μF, 16V
	C7	QERF1CM-106	E CAPACITOR	10μF, 16V
	C8	QERF1CM-106	E CAPACITOR	10μF, 16V
	C9	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C10	QERF1CM-106	E CAPACITOR	10μF, 16V
	C11	QERF1CM-106	E CAPACITOR	10μF, 16V
	SW1	YU40177-2	PUSH SWITCH, S1	
	SLD1	YU41030	SHEET	
	SPC1	YQM30029-23	SPACER	
	CN1	YU40682-16	CAP HOUSING, (BOARD TO BOARD)	
	CN2	YU40107-15	CAP HOUSING	
	CN3	YU40096-2Y	CAP HOUSING	
	CN4	YU40096-2	CAP HOUSING	
	CN6	YU40096-2	CAP HOUSING	

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9. PRE AMP BOARD ASSEMBLY ⟨04⟩

REF No.	PART No.	PART NAME, DESCRIPTION
PWBA	BW7690A	PRE/REC AMP MODULE

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10. MIC JACK BOARD ASSEMBLY ⟨05⟩

REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA	YB20079A1	MIC JACK BOARD ASSY	
R1	NRD187J-100N	RESISTOR	10Ω, 1/8W
J1	PU59711	MIC JACK	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	CN1	YU40096-3	CAP HOUSING	
	CN2	YU40095-2	CAP HOUSING	

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11. JACK BOARD ASSEMBLY 〈06〉

	PWBA	YB20079C2	JACK BOARD ASSY	
	D2	RLZ5.6B	ZENER DIODE	
	D3	RLZ8.2B	ZENER DIODE	
	R1	NRD187J-221N	RESISTOR	220Ω, 1/8W
	R2	NRD187J-102N	RESISTOR	1KΩ, 1/8W
	R3	NRD187J-221N	RESISTOR	220Ω, 1/8W
	R5	NRD187J-750N	RESISTOR	75Ω, 1/8W
	R6	NRD187J-750N	RESISTOR	75Ω, 1/8W
	R7	NRD187J-750N	RESISTOR	75Ω, 1/8W
	R8	NRD187J-750N	RESISTOR	75Ω, 1/8W
	R9	NRD187J-102N	RESISTOR	1KΩ, 1/8W
	FW1	YU40206-308	FLAT WIRE1	
	FW2	YU40206-308	FLAT WIRE2	
	J2	YU40223-2	JACK BOX	

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12. TRIGGER BOARD ASSEMBLY 〈07〉

	PWBA	YB20079B3-01	TRIGGER BOARD ASSY	
	D1	ERA81-004	DIODE	
	R1	QRD162J-683	RESISTOR	68KΩ, 1/6W
	SW1	PU59843	TRIGGER SW	
	SW2	YU40969	SLIDE SWITCH, ALARM SW	
⚠	HD1	YU40832	FUSE CLIP, X2	
	SPC1	YQ40478	SPACER	
	CN1	YU40096-3	CAP HOUSING	
	CN2	YU40096-4	CAP HOUSING	
	CN3	YU40096-2	CAP HOUSING	
⚠	F1	QMF51E2-3R15	FUSE, NOT INCL TRIGGER B ASSY	T3.15A, AC250V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION

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13. SENSOR BOARD ASSEMBLY 〈08〉

	PWBA	YS40012E	SENSOR BOARD ASSY
	SW1	YU40176	CASSETTE SWITCH
	PS1	YU40186	REEL SENSOR, X2

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14. FLY CONNECTOR ASSEMBLY 〈09〉

	PWBA	YB30047A-01	FLY CONNECTOR BOARD ASSY
	WR1	ML-Y00267B	FLY WIRE ASSY
	CN1	YU41053-03	CHIP FPC CONNECTOR

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15. VIDEO-1 BOARD ASSEMBLY 〈21〉

	PWBA	YB20072UA-01	VIDEO-1 BOARD ASSY
	IC2	UPD9319CGC	IC
	IC3	UPD6147G	IC
	or	TC9229F	IC
	IC4	UPD6148GS	IC
	IC5	H8D7128	IC
	IC6	UPC2370GH	IC
	IC7	UPC2371GH	IC
	IC8	MSM6831MS	IC
	Q1	2SA1532(BC)	TRANSISTOR
	or	2SA1576(QR)	TRANSISTOR
	Q2	2SD1819(RS)	TRANSISTOR
	Q3	2SC3936(BC)	TRANSISTOR
	or	2SC4098(PQ)	TRANSISTOR
	Q4	2SB1218(RS)	TRANSISTOR
	Q5	2SD1819(RS)	TRANSISTOR
	Q6	2SA1532(BC)	TRANSISTOR
	Q7	2SA1532(BC)	TRANSISTOR
	Q8	2SC3936(BC)	TRANSISTOR
	or	2SC4098(PQ)	TRANSISTOR
	Q9	2SC4181	TRANSISTOR
	Q10	2SC3936(BC)	TRANSISTOR
	or	2SC4098(PQ)	TRANSISTOR
	Q11	2SC3936(BC)	TRANSISTOR
	or	2SC4098(PQ)	TRANSISTOR
	Q12	2SC4181	TRANSISTOR
	Q20	2SC3936(BC)	TRANSISTOR
	or	2SC4098(PQ)	TRANSISTOR

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	Q21	2SA1532(BC)	TRANSISTOR
		or 2SA1576(QR)	TRANSISTOR
	Q22	2SA1532(BC)	TRANSISTOR
		or 2SA1576(QR)	TRANSISTOR
	Q23	2SA1532(BC)	TRANSISTOR
		or 2SA1576(QR)	TRANSISTOR
	Q24	2SA1532(BC)	TRANSISTOR
		or 2SA1576(QR)	TRANSISTOR
	Q25	2SA1532(BC)	TRANSISTOR
		or 2SA1576(QR)	TRANSISTOR
	Q26	2SA1532(BC)	TRANSISTOR
		or 2SA1576(QR)	TRANSISTOR
	Q28	2SC3936(BC)	TRANSISTOR
		or 2SC4098(PQ)	TRANSISTOR
	Q29	2SC3931(CD)	TRANSISTOR
	Q30	2SA1532(BC)	TRANSISTOR
		or 2SA1576(QR)	TRANSISTOR
	Q31	2SA1532(BC)	TRANSISTOR
		or 2SA1576(QR)	TRANSISTOR
	Q32	2SC3936(BC)	TRANSISTOR
		or 2SC4098(PQ)	TRANSISTOR
	Q33	2SA1532(BC)	TRANSISTOR
		or 2SA1576(QR)	TRANSISTOR
	Q34	2SC3936(BC)	TRANSISTOR
		or 2SC4098(PQ)	TRANSISTOR
	Q35	2SC3936(BC)	TRANSISTOR
		or 2SC4098(PQ)	TRANSISTOR
	Q36	2SC3936(BC)	TRANSISTOR
		or 2SC4098(PQ)	TRANSISTOR
	D1	MA143	DIODE
	D2	MA141WA	DIODE
	R1	NRSA63J-105N	RESISTOR 1MΩ, 1/16W
	R2	NRSA63J-102N	RESISTOR 1KΩ, 1/16W
	R3	NRSA63J-681N	RESISTOR 680Ω, 1/16W
	R4	NRSA63J-222N	RESISTOR 2.2KΩ, 1/16W
	R5	NRSA63J-222N	RESISTOR 2.2KΩ, 1/16W
	R6	NRSA63J-182N	RESISTOR 1.8KΩ, 1/16W
	R7	NRSA63J-470N	RESISTOR 47Ω, 1/16W
	R8	NRSA63J-470N	RESISTOR 47Ω, 1/16W
	R9	NRSA63J-121N	RESISTOR 120Ω, 1/16W
	R10	NRSA63J-512N	RESISTOR 5.1KΩ, 1/16W
	R11	NRSA63J-183N	RESISTOR 18KΩ, 1/16W
	R12	NRSA63J-102N	RESISTOR 1KΩ, 1/16W
	R13	NRSA63J-393N	RESISTOR 39KΩ, 1/16W
	R14	NRSA63J-102N	RESISTOR 1KΩ, 1/16W
	R15	NRSA63J-683N	RESISTOR 68KΩ, 1/16W
	R16	NVP1304-104N	V RESISTOR, BLOOMING 100KΩ
	R17	NRSA63J-183N	RESISTOR 18KΩ, 1/16W
	R18	NRSA63J-184N	RESISTOR 180KΩ, 1/16W
	R19	NRSA63J-753N	RESISTOR 75KΩ, 1/16W
	R20	NRSA63J-153N	RESISTOR 15KΩ, 1/16W
	R21	NRSA63J-472N	RESISTOR 4.7KΩ, 1/16W
	R22	NRSA63J-303N	RESISTOR 30KΩ, 1/16W
	R23	NRSA63J-303N	RESISTOR 30KΩ, 1/16W
	R24	NRSA63J-332N	RESISTOR 3.3KΩ, 1/16W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	R25	NRSA63J-220N	RESISTOR 22Ω, 1/16W
	R26	NRSA63J-104N	RESISTOR 100KΩ, 1/16W
	R27	NRSA63J-332N	RESISTOR 3.3KΩ, 1/16W
	R28	NRSA63J-100N	RESISTOR 10Ω, 1/16W
	R29	NRSA63J-102N	RESISTOR 1KΩ, 1/16W
	R30	NRSA63J-182N	RESISTOR 1.8KΩ, 1/16W
	R31	NRSA63J-332N	RESISTOR 3.3KΩ, 1/16W
	R32	NRSA63J-222N	RESISTOR 2.2KΩ, 1/16W
	R33	NRSA63J-221N	RESISTOR 220Ω, 1/16W
	R34	NRSA63J-331N	RESISTOR 330Ω, 1/16W
	R35	NRSA63J-221N	RESISTOR 220Ω, 1/16W
	R36	NRSA63J-681N	RESISTOR 680Ω, 1/16W
	R37	NRSA63J-681N	RESISTOR 680Ω, 1/16W
	R38	NRSA63J-560N	RESISTOR 56Ω, 1/16W
	R39	NRSA63J-680N	RESISTOR 68Ω, 1/16W
	R40	NRSA63J-681N	RESISTOR 680Ω, 1/16W
	R41	NRSA63J-102N	RESISTOR 1KΩ, 1/16W
	R42	NRSA63J-182N	RESISTOR 1.8KΩ, 1/16W
	R43	NRSA63J-100N	RESISTOR 10Ω, 1/16W
	R44	NRSA63J-272N	RESISTOR 2.7KΩ, 1/16W
	R46	NRSA63J-0R0A	RESISTOR 0Ω, 1/16W
	R47	NRSA63J-0R0A	RESISTOR 0Ω, 1/16W
	R50	NRSA63J-102N	RESISTOR 1KΩ, 1/16W
	R51	NRSA63J-102N	RESISTOR 1KΩ, 1/16W
	R52	NRSA63J-102N	RESISTOR 1KΩ, 1/16W
	R53	NRSA63J-332N	RESISTOR 3.3KΩ, 1/16W
	R54	NVP1304-223N	V RESISTOR, AGC 22KΩ
	R55	NRSA63J-473N	RESISTOR 47KΩ, 1/16W
	R56	NRSA63J-103N	RESISTOR 10KΩ, 1/16W
	R57	NRSA63J-303N	RESISTOR 30KΩ, 1/16W
	R58	NRSA63J-123N	RESISTOR 12KΩ, 1/16W
	R59	NRSA63J-473N	RESISTOR 47KΩ, 1/16W
	R60	NRSA63J-563N	RESISTOR 56KΩ, 1/16W
	R61	NRSA63J-102N	RESISTOR 1KΩ, 1/16W
	R62	NVP1304-103N	V RESISTOR, BLUE SEPA 10KΩ
	R63	NVP1304-103N	V RESISTOR, RED SEPA 10KΩ
	R64	NRSA63J-102N	RESISTOR 1KΩ, 1/16W
	R65	NVP1304-103N	V RESISTOR, R GAIN 10KΩ
	R66	NVP1304-103N	V RESISTOR, B GAIN 10KΩ
	R67	NRSA63J-332N	RESISTOR 3.3KΩ, 1/16W
	R68	NRSA63J-562N	RESISTOR 5.6KΩ, 1/16W
	R69	NRSA63J-102N	RESISTOR 1KΩ, 1/16W
	R70	NRSA63G-123N	RESISTOR 12KΩ, 1/16W
	R71	NRSA63G-103N	RESISTOR 10KΩ, 1/16W
	R72	NRSA63J-682N	RESISTOR 6.8KΩ, 1/16W
	R73	NRSA63J-103N	RESISTOR 10KΩ, 1/16W
	R74	NRSA63J-102N	RESISTOR 1KΩ, 1/16W
	R75	NVP1304-103N	V RESISTOR, R SET UP 10KΩ
	R76	NVP1304-103N	V RESISTOR, B SET UP 10KΩ
	R77	NRSA63J-102N	RESISTOR 1KΩ, 1/16W
	R78	NRSA63G-273N	RESISTOR 27KΩ, 1/16W
	R79	NRSA63G-393N	RESISTOR 39KΩ, 1/16W
	R80	NRSA63J-183N	RESISTOR 18KΩ, 1/16W
	R81	NRSA63J-243N	RESISTOR 24KΩ, 1/16W
	R82	NRSA63J-821N	RESISTOR 820Ω, 1/16W
	R83	NRSA63J-122N	RESISTOR 1.2KΩ, 1/16W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R84	NRSA63J-332N	RESISTOR	3.3KΩ, 1/16W
	R85	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R86	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R87	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R88	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R89	NRSA63J-562N	RESISTOR	5.6KΩ, 1/16W
	R90	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R94	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R95	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R96	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R97	NRSA63J-562N	RESISTOR	5.6KΩ, 1/16W
	R98	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R99	NRSA63J-124N	RESISTOR	120KΩ, 1/16W
	R100	NRSA63J-681N	RESISTOR	680Ω, 1/16W
	R101	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R102	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R103	NRSA63J-182N	RESISTOR	1.8KΩ, 1/16W
	R104	NRSA63J-391N	RESISTOR	390Ω, 1/16W
	R105	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R106	NRSA63J-271N	RESISTOR	270Ω, 1/16W
	R107	NRSA63J-751N	RESISTOR	750Ω, 1/16W
	R108	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R109	NRSA63J-122N	RESISTOR	1.2KΩ, 1/16W
	R110	NRSA63J-472N	RESISTOR	4.7KΩ, 1/16W
	R111	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R112	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R113	NVP1304-222N	V RESISTOR, 1H DELAYED SIG LEVEL	2.2KΩ
	R114	NRSA63J-153N	RESISTOR	15KΩ, 1/16W
	R115	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R116	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R117	NRSA63J-753N	RESISTOR	75KΩ, 1/16W
	R118	NRSA63J-684N	RESISTOR	680KΩ, 1/16W
	R120	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R121	NRSA63J-332N	RESISTOR	3.3KΩ, 1/16W
	R122	NRSA63J-822N	RESISTOR	8.2KΩ, 1/16W
	R123	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R124	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R125	NVP1304-103N	V RESISTOR, B-Y LEVEL	10KΩ
	R126	NRSA63J-821N	RESISTOR	820Ω, 1/16W
	R127	NRSA63J-122N	RESISTOR	1.2KΩ, 1/16W
	R128	NRSA63J-105N	RESISTOR	1MΩ, 1/16W
	R130	NRSA63J-333N	RESISTOR	33KΩ, 1/16W
	R131	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R132	NRSA63J-183N	RESISTOR	18KΩ, 1/16W
	R133	NRSA63J-333N	RESISTOR	33KΩ, 1/16W
	R134	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R135	NVP1304-103N	V RESISTOR, Y LEVEL	10KΩ
	R136	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R137	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R138	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R139	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R140	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R141	NRSA63J-333N	RESISTOR	33KΩ, 1/16W
	R142	NRSA63J-303N	RESISTOR	30KΩ, 1/16W
	R143	NRSA63J-393N	RESISTOR	39KΩ, 1/16W
	R144	NRSA63J-333N	RESISTOR	33KΩ, 1/16W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R145	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R146	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R147	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R148	NRSA63J-123N	RESISTOR	12KΩ, 1/16W
	R149	NVP1304-223N	V RESISTOR, COLOR OFFSET	22KΩ
	R151	NRSA63J-393N	RESISTOR	39KΩ, 1/16W
	R152	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R154	NVP1304-103N	V RESISTOR, COLOR DIF BALANCE	10KΩ
	R155	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R156	NRSA63J-393N	RESISTOR	39KΩ, 1/16W
	R157	NRSA63J-683N	RESISTOR	68KΩ, 1/16W
	C2	NCT07CH-100A	CAPACITOR	10PF
	C3	PU59867-100W	CHIP TRIMMER CAP, OSC FREQ	10PF
	C8	NCB31EK-103A	CAPACITOR	0.01µF, 25V
	C9	NEH10JM-107N	E CAPACITOR	100µF, 6.3V
	or	NEH30JM-107N	CAPACITOR	100µF, 6.3V
	C10	NCB31EK-103A	CAPACITOR	0.01µF, 25V
	C11	NEH10JM-226N	E CAPACITOR	22µF, 6.3V
	or	NEH30JM-226N	E CAPACITOR	22µF, 6.3V
	C12	NCB31EK-103A	TRIMMER CAPACITOR, OSC FREQ	10PF
	C13	NEH11CM-106N	E CAPACITOR	10µF, 16V
	or	NEH31CM-106N	E CAPACITOR	10µF, 16V
	C14	NCB31EK-103A	CAPACITOR	0.01µF, 25V
	C15	NCB31EK-103A	CAPACITOR	0.01µF, 25V
	C16	NEH11CM-476N	E CAPACITOR	47µF, 16V
	or	NEH31CM-476N	CAPACITOR	47µF, 16V
	C17	NCB31EK-103A	CAPACITOR	0.01µF, 25V
	C18	NCB31EK-103A	CAPACITOR	0.01µF, 25V
	C19	NEH10JM-107N	E CAPACITOR	100µF, 6.3V
	or	NEH30JM-107N	CAPACITOR	100µF, 6.3V
	C20	NEH11CM-476N	E CAPACITOR	47µF, 16V
	or	NEH31CM-476N	CAPACITOR	47µF, 16V
	C21	NCB31EK-103A	CAPACITOR	0.01µF, 25V
	C22	NEH10JM-226N	E CAPACITOR	22µF, 6.3V
	or	NEH30JM-226N	E CAPACITOR	22µF, 6.3V
	C23	NCB31EK-103A	CAPACITOR	0.01µF, 25V
	C24	NCB31EK-103A	CAPACITOR	0.01µF, 25V
	C25	NEH11EM-475N	E CAPACITOR	4.7µF, 25V
	or	NEH31EM-475N	E CAPACITOR	4.7µF, 25V
	C26	NCB31EK-103A	CAPACITOR	0.01µF, 25V
	C27	NCB31EK-103A	CAPACITOR	0.01µF, 25V
	C28	NCB31EK-103A	CAPACITOR	0.01µF, 25V
	C29	NCB31EK-103A	CAPACITOR	0.01µF, 25V
	C30	NCB31EK-103A	CAPACITOR	0.01µF, 25V
	C31	NCB31EK-103A	CAPACITOR	0.01µF, 25V
	C32	NEH11CM-106N	E CAPACITOR	10µF, 16V
	or	NEH31CM-106N	E CAPACITOR	10µF, 16V
	C33	NCB31EK-103A	CAPACITOR	0.01µF, 25V
	C34	QEF81AM-106	TANTAL CAPACITOR	10µF, 10V
	C35	NEH10JM-226N	E CAPACITOR	22µF, 6.3V
	or	NEH30JM-226N	E CAPACITOR	22µF, 6.3V
	C36	NCB31EK-103A	CAPACITOR	0.01µF, 25V
	C37	NCT07CH-221A	CAPACITOR	220PF
	C38	QEF80GM-106	TANTAL CAPACITOR	10µF, 4.0V
	C39	NCT07CH-330A	CAPACITOR	33PF
	C40	NCT07CH-470A	CAPACITOR	47PF

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C41	NCT07CH-470A	CAPACITOR	47PF
	C42	QCF81CZ-105	CAPACITOR	1μF, 16V
	C43	NEH11EM-475N	E CAPACITOR	4.7μF, 25V
		or NEH31EM-475N	E CAPACITOR	4.7μF, 25V
	C45	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C46	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C47	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C48	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C49	PU59913-473	CAPACITOR	0.047μF
		or NCR21CM-473A	CAPACITOR	0.047μF, 16V
	C50	QEE81CM-226	TANTAL CAPACITOR	22μF, 16V
	C51	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C52	QEZ0149-567	E CAPACITOR	560μF
	C53	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C54	NEH11CM-106NZ	E CAPACITOR	10μF, 16V
		or NEH31CM-106NZ	E CAPACITOR	10μF, 16V
	C55	NEH10JM-226NZ	E CAPACITOR	22μF, 6.3V
		or NEH30JM-226N	E CAPACITOR	22μF, 6.3V
	C56	QCF81CZ-105	CAPACITOR	1μF, 16V
	C57	QCF81CZ-105	CAPACITOR	1μF, 16V
	C58	QCF81CZ-105	CAPACITOR	1μF, 16V
	C59	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C60	QCF81CZ-105	CAPACITOR	1μF, 16V
	C61	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C62	QCF81CZ-105	CAPACITOR	1μF, 16V
	C63	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C64	PU59913-473	CAPACITOR	0.047μF
		or NCR21CM-473A	CAPACITOR	0.047μF, 16V
	C65	PU59913-473	CAPACITOR	0.047μF
		or NCR21CM-473A	CAPACITOR	0.047μF, 16V
	C66	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C67	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C68	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C69	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C70	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C71	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C72	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C73	NEH10JM-107N	E CAPACITOR	100μF, 6.3V
		or NEH30JM-107N	CAPACITOR	100μF, 6.3V
	C74	NCF31CZ-104A	CAPACITOR	0.1μF, 16V
	C79	NCF31CZ-104A	CAPACITOR	0.1μF, 16V
	C80	QEF81AM-106	TANTAL CAPACITOR	10μF, 10V
	C81	QEF81CM-475	TANTAL CAPACITOR	4.7μF, 16V
	C82	QEF81VM-334	TANTAL CAPACITOR	0.33μF, 35V
	C83	QEF81VM-334	TANTAL CAPACITOR	0.33μF, 35V
	C84	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C85	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C86	QEF81AM-475	TANTAL CAPACITOR	4.7μF, 10V
	C87	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C88	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C89	QEF81AM-475	TANTAL CAPACITOR	4.7μF, 10V
	C90	QEF81AM-475	TANTAL CAPACITOR	4.7μF, 10V
	C91	NCF31CZ-104A	CAPACITOR	0.1μF, 16V
	C92	NCF31CZ-104A	CAPACITOR	0.1μF, 16V
	C100	NEH10JM-226N	E CAPACITOR	22μF, 6.3V
		or NEH30JM-226N	E CAPACITOR	22μF, 6.3V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C101	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C102	PU59913-473	CAPACITOR	0.047μF
		or NCR21CM-473A	CAPACITOR	0.047μF, 16V
	C103	NCF31CZ-104A	CAPACITOR	0.1μF, 16V
	C104	PU59913-473	CAPACITOR	0.047μF
		or NCR21CM-473A	CAPACITOR	0.047μF, 16V
	C105	NCT07CH-220A	CAPACITOR	22PF
	C106	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C107	QEF81AM-106	TANTAL CAPACITOR	10μF, 10V
	C108	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C109	PU59913-473	CAPACITOR	0.047μF
		or NCR21CM-473A	CAPACITOR	0.047μF, 16V
	C110	PU59913-473	CAPACITOR	0.047μF
		or NCR21CM-473A	CAPACITOR	0.047μF, 16V
	C111	PU59913-473	CAPACITOR	0.047μF
		or NCR21CM-473A	CAPACITOR	0.047μF, 16V
	C112	PU59913-473	CAPACITOR	0.047μF
		or NCR21CM-473A	CAPACITOR	0.047μF, 16V
	C113	PU59913-473	CAPACITOR	0.047μF
		or NCR21CM-473A	CAPACITOR	0.047μF, 16V
	C114	PU59913-473	CAPACITOR	0.047μF
		or NCR21CM-473A	CAPACITOR	0.047μF, 16V
	C115	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C116	QCF81CZ-105	CAPACITOR	1μF, 16V
	C118	QER41CM-106	E CAPACITOR	10μF, 16V
	C119	QCF81CZ-105	CAPACITOR	1μF, 16V
	C120	QER41CM-106	E CAPACITOR	10μF, 16V
	L101	YU41135-220K	COIL	22μH
		or YU40740-220K	COIL	22μH
	L102	YU41135-220K	COIL	22μH
		or YU40740-220K	COIL	22μH
	L103	YU41135-220K	COIL	22μH
		or YU40740-220K	COIL	22μH
	L104	YU41135-220K	COIL	22μH
		or YU40740-220K	COIL	22μH
	L105	YU41135-220K	COIL	22μH
		or YU40740-220K	COIL	22μH
	L106	YU41135-220K	COIL	22μH
		or YU40740-220K	COIL	22μH
	L107	YU41135-220K	COIL	22μH
		or YU40740-220K	COIL	22μH
	L108	YU41135-220K	COIL	22μH
		or YU40740-220K	COIL	22μH
	L109	YU41135-220K	COIL	22μH
		or YU40740-220K	COIL	22μH
	L110	YU41135-220K	COIL	22μH
		or YU40740-220K	COIL	22μH
	L111	YU40740-470KY	COIL	47μH
	L112	QRS188J-470Y	RESISTOR	47Ω, 1/8W
	L113	YU41135-470	COIL	47μH
		or YU40740-470K	COIL	47μH
	L120	YU41607-Y	FERRITE BEAD	
	L121	YU41607-Y	FERRITE BEAD	
	EQ102	YU40324	EQUALIZER	
	EQ103	YU40324	EQUALIZER	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	LPF103	YU40390-3	LOW PASS FILTER	
	LPF104	YU40444	LOW PASS FILTER	
		or YU40600-P	LOW PASS FILTER	
	LPF105	YU40443	LOW PASS FILTER	
	LPF106	YU40444	LOW PASS FILTER	
		or YU40600-P	LOW PASS FILTER	
	DL101	YU40128-2	DELAY LINE	
⚠	X101	YU40389	CRYSTAL RESONATOR	
	FT101	YU40639	TRAP, TRAP101	
		or YU40639-Z	TRAP, TRAP101	
	SLD1	YU40554-1-1	INSULATER	
	TP101	YU40581	TEST PIN, SAMPLING OUT	
	TP102	YU40581	TEST PIN, B IN	
	TP103	YU40581	TEST PIN, R IN	
	TP104	YU40581	TEST PIN, SSG CLOCK	
	TP105	YU40581-AY	TEST PIN, GND	
	TP106	YU40581-AY	TEST PIN, SET UP Vcc	
	TP107	YU40581	TEST PIN, V EDGE OUT	
	CN101	PU58655-3	CAP HOUSING	
	CN102	PU58654-10	CAP HOUSING	
	CN103	YU40101-10	CAP HOUSING, (BOARD TO BOARD)	
	CN104	YU40101-8	CAP HOUSING, (BOARD TO BOARD)	
	CN105	YU40103-8	CAP HOUSING, (BOARD TO BOARD)	
	CN106	YU40101-10	CAP HOUSING, (BOARD TO BOARD)	
	CN107	YU40101-8	CAP HOUSING, (BOARD TO BOARD)	
⚠	CP101	ICP-F20	CIRCUIT PROTECTOR	
⚠	CP102	ICP-F10	CIRCUIT PROTECTOR	

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16. OSC BOARD ASSEMBLY 〈10〉

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	YB20142B-03	OSC BOARD ASSY	
	Q1	2SC4081(RS)	TRANSISTOR	
	Q2	2SC4081(RS)	TRANSISTOR	
	Q3	2SC4081(RS)	TRANSISTOR	
	Q4	2SC4081(RS)	TRANSISTOR	
	Q5	2SC4081(RS)	TRANSISTOR	
	R1	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R2	QRSA08J-153YN	RESISTOR	15KΩ, 1/10W
	R3	QRSA08K-5R6YN	RESISTOR	5.6Ω, 1/10W
	R4	QRSA08K-5R6YN	RESISTOR	5.6Ω, 1/10W
	R5	QRSA08J-393YN	RESISTOR	39KΩ, 1/10W
	R6	QRSA08J-393YN	RESISTOR	39KΩ, 1/10W
	R7	QRSA08K-4R7YN	RESISTOR	4.7Ω, 1/10W
	R8	QRSA08K-4R7YN	RESISTOR	4.7Ω, 1/10W
	R9	QRSA08J-683YN	RESISTOR	68KΩ, 1/10W
	R10	QRSA08J-683YN	RESISTOR	68KΩ, 1/10W
	C1	QCTA1CH-5R0	CAPACITOR	5PF, 16V
	C2	QCF81CZ-105	CAPACITOR	1μF, 16V
	C3	QCTA1CH-101	CAPACITOR	100PF, 16V
	C4	QCTA1CH-181	CAPACITOR	180PF, 16V
	C5	QCTA1CH-301	CAPACITOR	300PF, 16V
	C6	QCTA1CH-181	CAPACITOR	180PF, 16V
	C7	QCYA1HK-103	CAPACITOR	0.01μF, 50V
	C8	QCYA1HK-332	CAPACITOR	0.0033μF, 50V
	C9	QCYA1HK-332	CAPACITOR	0.0033μF, 50V
	C10	QFZ9011-473	CAPACITOR	0.047μF
	C11	QCYA1HK-562	CAPACITOR	0.0056μF, 50V
	L1	YU41135-470	COIL	47μH
	L2	PU58201-1R2K	COIL	1.2μH
⚠	L3	PU56175	S.TRANS	
⚠	L4	YU41052	F.E. OSC COIL	
	HD1	YQ41362	HOLDER(PWB)	
	SCW1	SPSH1725N	MINI SCREW	
	SLD1	YQ30375	SHIELD COVER	
	SLD2	YU41142	SHIELD PLATE	
	SPC1	WBS2000N	WASHER	
	CN1	YU40096-3	CAP HOUSING	
	CN2	YU40096-5	CAP HOUSING	
	CN3	YU40096-2	CAP HOUSING	

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17. VIDEO-2 BOARD ASSEMBLY 〈22〉

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	YB20073Y-03	VIDEO-2 BOARD ASSY	
	IC201	MSM6985MS	IC	
	IC202	MSM6985MS	IC	
	Q201	2SC3936(BC)	TRANSISTOR	
		or 2SC4098(PQ)	TRANSISTOR	
	Q202	2SA1532(BC)	TRANSISTOR	
		or 2SA1576(QR)	TRANSISTOR	
	Q203	2SC3936(BC)	TRANSISTOR	
		or 2SC4098(PQ)	TRANSISTOR	
	Q204	2SA1532(BC)	TRANSISTOR	
		or 2SA1576(QR)	TRANSISTOR	
	R201	QRSA08J-0R0Y	RESISTOR	0Ω, 1/10W
	R203	QRSA08J-152	RESISTOR	1.5KΩ, 1/10W
	R204	QRSA08J-102	RESISTOR	1KΩ, 1/10W
	R205	QRSA08J-102	RESISTOR	1KΩ, 1/10W
	R206	QRSA08J-222	RESISTOR	2.2KΩ, 1/10W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R207	QRSA08J-472	RESISTOR	4.7KΩ, 1/10W
R208	QRSA08J-123Y	RESISTOR	12KΩ, 1/10W
R209	QRSA08J-152	RESISTOR	1.5KΩ, 1/10W
R210	QRSA08J-102	RESISTOR	1KΩ, 1/10W
R211	QRSA08J-102	RESISTOR	1KΩ, 1/10W
R212	QRSA08J-222	RESISTOR	2.2KΩ, 1/10W
C201	QEF81CM-685	TANTAL CAPACITOR	6.8μF, 16V
C202	QEF81AM-475	TANTAL CAPACITOR	4.7μF, 10V
C203	QCYA1HJ-103	CAPACITOR	0.01μF, 50V
C204	QCYA1HJ-103	CAPACITOR	0.01μF, 50V
C205	QCYA1HJ-103	CAPACITOR	0.01μF, 50V
C206	QCYA1HJ-103	CAPACITOR	0.01μF, 50V
C207	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
C208	QEF81AM-475	TANTAL CAPACITOR	4.7μF, 10V
C209	QCYA1HJ-103	CAPACITOR	0.01μF, 50V
C210	QCYA1HJ-103	CAPACITOR	0.01μF, 50V
C211	QCYA1HJ-103	CAPACITOR	0.01μF, 50V
C212	QCYA1HJ-103	CAPACITOR	0.01μF, 50V
C213	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
C214	QEF81AM-475	TANTAL CAPACITOR	4.7μF, 10V
L201	YU41135-220K	COIL	22μH
L202	YU41135-220K	COIL	22μH
LPF201	YU40392	LOW PASS FILTER	
LPF202	YU40392	LOW PASS FILTER	
CN201	YU40105-8	CAP HOUSING, (BOARD TO BOARD)	

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18. ENCODER BORAD ASSEMBLY ⟨23⟩

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA	YB20128B-02	ENCODER BOARD ASSY	
IC301	AN2276S	IC	
IC302	BA7606F	IC	
IC303	MC8181D	IC	
IC304	TC4S71F	IC	
IC305	NJM4560M	IC	
	or RC4560M	IC	
	or BA4560F	IC	
IC306	NJM4560M	IC	
	or RC4560M	IC	
	or BA4560F	IC	
IC307	H8D7051A	IC	
IC308	TC4S69F	IC	
IC309	TC4S81F	IC	
IC310	TC4S81F	IC	
Q301	2SC3936(BC)	TRANSISTOR	
	or 2SC4177(56)	TRANSISTOR	
	or 2SC4098(PQ)	TRANSISTOR	
Q302	2SC3936(C)	TRANSISTOR	
	or 2SC4098(Q)	TRANSISTOR	
	or 2SC4177(6)	TRANSISTOR	
Q303	2SC3936(C)	TRANSISTOR	
	or 2SC4098(Q)	TRANSISTOR	
	or 2SC4177(6)	TRANSISTOR	
Q304	2SA1532(BC)	TRANSISTOR	
	or 2SA1576(QR)	TRANSISTOR	
Q305	2SC3936(BC)	TRANSISTOR	
	or 2SC4098(PQ)	TRANSISTOR	
	or 2SC4177(56)	TRANSISTOR	
Q306	2SC3936(BC)	TRANSISTOR	
	or 2SC4098(PQ)	TRANSISTOR	
	or 2SC4177(56)	TRANSISTOR	
Q307	2SC3936(BC)	TRANSISTOR	
	or 2SC4098(PQ)	TRANSISTOR	
	or 2SC4177(56)	TRANSISTOR	
Q308	2SC3936(BC)	TRANSISTOR	
	or 2SC4177(56)	TRANSISTOR	
	or 2SC4098(PQ)	TRANSISTOR	
Q309	2SC3936(BC)	TRANSISTOR	
	or 2SC4177(56)	TRANSISTOR	
	or 2SC4098(PQ)	TRANSISTOR	
Q310	2SC3936(BC)	TRANSISTOR	
	or 2SC4177(56)	TRANSISTOR	
	or 2SC4098(PQ)	TRANSISTOR	
Q311	2SC3931(BC)	TRANSISTOR	
	or 2SC4178(34)	TRANSISTOR	
	or 2SC4099(NP)	TRANSISTOR	
D301	RD7.5M(B2)	ZENER DIODE	
D302	MA141WA	DIODE	
R301	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
R302	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
R303	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
R304	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
R305	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
R306	NRSA63J-471N	RESISTOR	470Ω, 1/16W
R307	NRSA63J-123N	RESISTOR	12KΩ, 1/16W
R308	NRSA63J-392N	RESISTOR	3.9KΩ, 1/16W
R309	NRSA63J-123N	RESISTOR	12KΩ, 1/16W
R310	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
R311	NRSA63G-224N	RESISTOR	220KΩ, 1/16W
R312	NRSA63G-223N	RESISTOR	22KΩ, 1/16W
R313	NRSA63G-473N	RESISTOR	47KΩ, 1/16W
R314	NRSA63J-122N	RESISTOR	1.2KΩ, 1/16W
R315	NRSA63J-682N	RESISTOR	6.8KΩ, 1/16W
R316	NRSA63G-223N	RESISTOR	22KΩ, 1/16W
R317	NRSA63G-683N	RESISTOR	68KΩ, 1/16W
R318	NRSA63J-123N	RESISTOR	12KΩ, 1/16W
R319	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
R320	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
R321	NRSA63J-562N	RESISTOR	5.6KΩ, 1/16W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R322	NRSA63G-223N	RESISTOR	22KΩ, 1/16W
	R323	NRSA63J-123N	RESISTOR	12KΩ, 1/16W
	R324	NRSA63J-562N	RESISTOR	5.6KΩ, 1/16W
	R325	NRSA63G-224N	RESISTOR	220KΩ, 1/16W
	R326	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R327	NVP1304-223N	V RESISTOR, WHITE CLIP LEVEL	22KΩ
	R328	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R329	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R330	NVP1304-103N	V RESISTOR, SYNC LEVEL	10KΩ
	R331	NRSA63J-123N	RESISTOR	12KΩ, 1/16W
	R332	NRSA63J-822N	RESISTOR	8.2KΩ, 1/16W
	R333	NRSA63J-271N	RESISTOR	270Ω, 1/16W
	R334	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R335	NRSA63J-682N	RESISTOR	6.8KΩ, 1/16W
	R336	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R337	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R338	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R339	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R340	NRSA63J-100N	RESISTOR	10Ω, 1/16W
	R341	NRSA63J-223N	RESISTOR	22KΩ, 1/16W
	R342	NRSA63J-223N	RESISTOR	22KΩ, 1/16W
	R343	NRSA63J-223N	RESISTOR	22KΩ, 1/16W
	R344	NVP1304-223N	V RESISTOR, R ENCODER BALANCE	22KΩ
	R345	NVP1304-223N	V RESISTOR, B ENCODER BALANCE	22KΩ
	R346	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R347	NVP1304-473N	V RESISTOR, SUB CARR PHASE	47KΩ
	R348	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R349	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R350	NRSA63J-100N	RESISTOR	10Ω, 1/16W
	R351	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R352	NRSA63J-223N	RESISTOR	22KΩ, 1/16W
	R353	NVP1304-103N	V RESISTOR, BURST LEVEL	10KΩ
	R354	NRSA63J-223N	RESISTOR	22KΩ, 1/16W
	R355	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R356	NVP1304-103N	V RESISTOR, COLOR GAIN	10KΩ
	R357	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R358	NRSA63J-272N	RESISTOR	2.7KΩ, 1/16W
	R359	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R360	NRSA63J-821N	RESISTOR	820Ω, 1/16W
	R361	NRSA63J-681N	RESISTOR	680Ω, 1/16W
	R362	NRSA63J-821N	RESISTOR	820Ω, 1/16W
	R363	NRSA63J-681N	RESISTOR	680Ω, 1/16W
	R364	NVP1304-222N	V RESISTOR, BURST PHASE	2.2KΩ
	R365	NRSA63J-562N	RESISTOR	5.6KΩ, 1/16W
	R370	NRSA63J-394N	RESISTOR	390KΩ, 1/16W
	R374	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R375	NVP1304-223N	V RESISTOR, B LINE SW CARR	22KΩ
	R376	NVP1304-223N	V RESISTOR, R LINE SW CARR	22KΩ
	R377	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R378	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R379	NRSA63J-223N	RESISTOR	22KΩ, 1/16W
	R380	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R381	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R383	NRSA63J-272N	RESISTOR	2.7KΩ, 1/16W
	R384	NRSA63J-272N	RESISTOR	2.7KΩ, 1/16W
	R385	NVP1304-103N	V RESISTOR, RED PHASE	10KΩ

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R388	NRSA63J-681N	RESISTOR	680Ω, 1/16W
	R390	NRSA63J-331N	RESISTOR	330Ω, 1/16W
	R391	NRSA63G-103N	RESISTOR	10KΩ, 1/16W
	R392	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R393	NRSA63J-824N	RESISTOR	820KΩ, 1/16W
	C301	NCR21CM-473A	CAPACITOR	0.047μF, 16V
	or	PU59913-473	CAPACITOR	0.047μF
	or	NCR21CK-473A	CAPACITOR	0.047μF, 16V
	C302	NCR21CM-473A	CAPACITOR	0.047μF, 16V
	or	PU59913-473	CAPACITOR	0.047μF
	or	NCR21CK-473A	CAPACITOR	0.047μF, 16V
	C303	NCR21CM-473A	CAPACITOR	0.047μF, 16V
	or	NCR21CK-473A	CAPACITOR	0.047μF, 16V
	or	PU59913-473	CAPACITOR	0.047μF
	C304	NCR21CM-473A	CAPACITOR	0.047μF, 16V
	or	NCR21CK-473A	CAPACITOR	0.047μF, 16V
	or	PU59913-473	CAPACITOR	0.047μF
	C305	NCR21CM-473A	CAPACITOR	0.047μF, 16V
	or	NCR21CK-473A	CAPACITOR	0.047μF, 16V
	or	PU59913-473	CAPACITOR	0.047μF
	C306	NCR21CM-473A	CAPACITOR	0.047μF, 16V
	or	PU59913-473	CAPACITOR	0.047μF
	or	NCR21CK-473A	CAPACITOR	0.047μF, 16V
	C307	NEH11CM-106N	E CAPACITOR	10μF, 16V
	C308	NEH11CM-106N	E CAPACITOR	10μF, 16V
	C309	QEF81EM-155	TANTAL CAPACITOR	1.5μF, 25V
	C310	NCR21CM-473A	CAPACITOR	0.047μF, 16V
	or	NCR21CK-473A	CAPACITOR	0.047μF, 16V
	or	PU59913-473	CAPACITOR	0.047μF
	C311	NCR21CM-473A	CAPACITOR	0.047μF, 16V
	or	PU59913-473	CAPACITOR	0.047μF
	or	NCR21CK-473A	CAPACITOR	0.047μF, 16V
	C312	NCR21CM-473A	CAPACITOR	0.047μF, 16V
	or	NCR21CK-473A	CAPACITOR	0.047μF, 16V
	or	PU59913-473	CAPACITOR	0.047μF
	C313	NCR21CM-473A	CAPACITOR	0.047μF, 16V
	or	PU59913-473	CAPACITOR	0.047μF
	or	NCR21CK-473A	CAPACITOR	0.047μF, 16V
	C314	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C315	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C316	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C317	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C318	QEF80GM-226	TANTAL CAPACITOR	22μF, 4.0V
	C319	NCT07CH-470A	CAPACITOR	47PF
	C320	NCT07CH-560A	CAPACITOR	56PF
	C321	NCT07CH-560A	CAPACITOR	56PF
	C322	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C323	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C324	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C325	QED40JM-127	E CAPACITOR	120μF, 6.3V
	C326	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C327	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C328	QEJ41CM-476	TANTAL CAPACITOR	47μF, 16V
	C329	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C330	NEH10JM-226NZ	E CAPACITOR	22μF, 6.3V
	C331	NEH10JM-226NZ	E CAPACITOR	22μF, 6.3V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C332	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C333	NEH10JM-226NZ	E CAPACITOR	22μF, 6.3V
	C334	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C335	NCS31HJ-331A	CAPACITOR	330PF, 50V
	C336	QCF81CZ-105	CAPACITOR	1μF, 16V
	C337	QCF81CZ-105	CAPACITOR	1μF, 16V
	C339	NCT07CH-101A	CAPACITOR	100PF
	C340	NCT07CH-101A	CAPACITOR	100PF
	C341	NCF31CZ-104A	CAPACITOR	0.1μF, 16V
	C342	NCF31CZ-104A	CAPACITOR	0.1μF, 16V
	C343	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C347	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	L301	YU41135-220K	COIL	22μH
	L302	YU41135-220K	COIL	22μH
	L303	YU40910	FERRITE BEAD	
	L304	YU41135-101K	COIL	100μH
	EQ301	YU40637	EQUALIZER	
	or	YU40720-P	EQUALIZER	
	BPF301	YU40393-2	BAND PASS FILTER	
	or	YU40599-P	BAND PASS FILTER	
	FT301	YU40487	443TRAP, TRAP301	
	TP303	YU40648	TEST PIN, Y OUT	
	TP305	YU40648	TEST PIN, GND	
	CN301	YU40105-10	CAP HOUSING, (BOARD TO BOARD)	
	CN302	YU40096-8	CAP HOUSING	
	CN303	YU40096-2Y	CAP HOUSING	
	CN304	YU40096-4Y	CAP HOUSING	
	CN305	YU40105-8	CAP HOUSING, (BOARD TO BOARD)	

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19. INDICATOR-1 BOARD ASSEMBLY ⟨24⟩

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	YB20256C-01	IND-1 BOARD ASSY	
	IC401	VC2079B	IC	
	IC402	VC2041	IC	
	IC404	LM324NS	IC	
	IC405	H8D7122	IC	
	or	6VT08	IC	
	Q403	2SC3936(BC)	TRANSISTOR	
	Q404	2SC3936(BC)	TRANSISTOR	
	Q405	2SC3936(BC)	TRANSISTOR	
	Q406	2SC3936(BC)	TRANSISTOR	
	Q407	2SA1532(BC)	TRANSISTOR	
	Q408	2SA1532(BC)	TRANSISTOR	
	Q409	2SK198(PQ)	FE TRANSISTOR	
	Q410	2SC3936(BC)	TRANSISTOR	
	Q411	2SA1532(BC)	TRANSISTOR	
	Q412	2SA1532(BC)	TRANSISTOR	
	Q413	2SA1532(BC)	TRANSISTOR	
	D401	RD8.2M(B2)	ZENER DIODE	
	or	RD8.2M(B3)	ZENER DIODE	
	D402	MA704	DIODE	
	D403	MA141WK	DIODE	
⚠	D404	MA704	DIODE	
	D405	MA141WA	DIODE	
	R401	NRSA63J-122N	RESISTOR	1.2KΩ, 1/16W
	R402	NVP1304-472N	V RESISTOR, IND OSC	4.7KΩ
	R404	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R405	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R407	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R409	NRSA63J-223N	RESISTOR	22KΩ, 1/16W
⚠	R413	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R420	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R421	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R422	NRSA63J-392N	RESISTOR	3.9KΩ, 1/16W
	R423	NRSA63J-682N	RESISTOR	6.8KΩ, 1/16W
	R424	NRSA63J-333N	RESISTOR	33KΩ, 1/16W
	R425	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R426	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R427	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R428	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R429	NRSA63J-472N	RESISTOR	4.7KΩ, 1/16W
	R430	NRSA63J-101N	RESISTOR	100Ω, 1/16W
	R431	NRSA63J-152N	RESISTOR	1.5KΩ, 1/16W
	R432	NRSA63J-333N	RESISTOR	33KΩ, 1/16W
	R433	NRSA63J-223N	RESISTOR	22KΩ, 1/16W
	R434	NRSA63J-101N	RESISTOR	100Ω, 1/16W
	R435	NRSA63J-333N	RESISTOR	33KΩ, 1/16W
	R436	NRSA63J-223N	RESISTOR	22KΩ, 1/16W
	R437	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R438	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R439	NRSA63J-122N	RESISTOR	1.2KΩ, 1/16W
	R440	NRSA63J-683N	RESISTOR	68KΩ, 1/16W
	R441	NRSA63J-823N	RESISTOR	82KΩ, 1/16W
	R442	NRSA63J-392N	RESISTOR	3.9KΩ, 1/16W
	R443	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R445	NRSA63J-272N	RESISTOR	2.7KΩ, 1/16W
	R446	NVP1304-102N	V RESISTOR, IRIS	1KΩ
	R447	NRSA63J-182N	RESISTOR	1.8KΩ, 1/16W
	R448	NRSA63J-560N	RESISTOR	56Ω, 1/16W
	R449	NRSA63J-273N	RESISTOR	27KΩ, 1/16W
	R450	NRSA63J-223N	RESISTOR	22KΩ, 1/16W
	R451	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R452	NRSA63J-123N	RESISTOR	12KΩ, 1/16W
	R453	NRSA63J-123N	RESISTOR	12KΩ, 1/16W
	R454	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R455	NRSA63J-103N	RESISTOR	10KΩ, 1/16W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R457	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R458	NRSA63J-471N	RESISTOR	470Ω, 1/16W
	R459	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R460	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R462	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R463	NRSA63J-333N	RESISTOR	33KΩ, 1/16W
	R464	NRSA63J-682N	RESISTOR	6.8KΩ, 1/16W
	R465	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R466	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R467	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R468	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R469	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R470	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R471	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R474	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R475	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R476	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R478	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R479	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R480	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R482	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R483	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R485	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R487	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	C402	NCF31CZ-104A	CAPACITOR	0.1μF, 16V
	C403	QEF81CM-226	TANTAL CAPACITOR	22μF, 16V
	C404	NCF31CZ-104A	CAPACITOR	0.1μF, 16V
	C405	NCT07CH-180A	CAPACITOR	18PF
	C406	NCT07CH-220A	CAPACITOR	22PF
	C407	NCT07CH-220A	CAPACITOR	22PF
	C408	QEF80JM-476XB	TANTAL CAPACITOR	47μF, 6.3V
	C409	NEH10JM-226NZ	E CAPACITOR	22μF, 6.3V
	or	NEH30JM-226NZ	E CAPACITOR	22μF, 6.3V
	C410	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C413	PU59758-105	CAPACITOR	1μF
	or	QCF81CZ-105	CAPACITOR	1μF, 16V
	C414	NEH11CM-106NZ	E CAPACITOR	10μF, 16V
	or	NEH31CM-106NZ	E CAPACITOR	10μF, 16V
	C415	NEH10JM-226NZ	E CAPACITOR	22μF, 6.3V
	or	NEH30JM-226NZ	E CAPACITOR	22μF, 6.3V
	C416	NCT07CH-101A	CAPACITOR	100PF
	C417	NCF31CZ-104A	CAPACITOR	0.1μF, 16V
	C418	YU41344	TANTAL CAPACITOR	
	C419	QEF80JM-106	TANTAL CAPACITOR	10μF, 6.3V
	C420	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C421	QEF81EM-474	TANTAL CAPACITOR	0.47μF, 25V
	C422	NEH11CM-106NZ	E CAPACITOR	10μF, 16V
	or	NEH31CM-106NZ	E CAPACITOR	10μF, 16V
	C423	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C425	NCS31HK-221A	CAPACITOR	220PF, 50V
	C426	NCF31CZ-104A	CAPACITOR	0.1μF, 16V
	C427	NCF31CZ-104A	CAPACITOR	0.1μF, 16V
	C428	NCF31CZ-104A	CAPACITOR	0.1μF, 16V
	C429	NCF31CZ-104A	CAPACITOR	0.1μF, 16V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C431	NCF31CZ-104A	CAPACITOR	0.1μF, 16V
	C432	NCF31CZ-104A	CAPACITOR	0.1μF, 16V
	C433	NCF31CZ-104A	CAPACITOR	0.1μF, 16V
	C434	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C435	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C437	NCB31EK-103A	CAPACITOR	0.01μF, 25V
	C438	NCB31HK-152A	CAPACITOR	0.0015μF, 50V
	L401	YU41135-220KY	COIL	22μH
	L402	PU58201-120K	COIL	12μH
	L405	PU58201-120K	COIL	12μH
	L406	PU58201-120K	COIL	12μH
⚠	X401	YU40141	CRYSTAL RESONATOR	
	WR1	YU40616	FLAT WIRE 5	
	or	YU40896	FLAT WIRE 5	
	CN401	YU40179-110	CAP HOUSING	
	CN402	YU40108-10	CAP HOUSING	
	CN403	YU40105-10	CAP HOUSING, (BOARD TO BOARD)	
	CN404	YU40105-22	CAP HOUSING, (BOARD TO BOARD)	
	CN405	YU40096-7	CAP HOUSING	
	CN408	YU40096-10	CAP HOUSING	
	CN409	YU40096-2R	CAP HOUSING	
	CN410	YU40096-2R	CAP HOUSING	
	CN411	YU40105-8	CAP HOUSING, (BOARD TO BOARD)	
	CN412	YU40096-3Y	CAP HOUSING	
	CN413	YU40096-3	CAP HOUSING	

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20. FULL AUTO WHITE BOARD ASSEMBLY ⟨25⟩

REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA	YB20031E-01	FAW BOARD ASSY	
IC501	VC2038	IC	
IC502	XRA10324F	IC	
or	UPC324G2	IC	
IC503	XRA10324F	IC	
or	UPC324G2	IC	
Q501	2SA1037K(QR)	TRANSISTOR	
Q502	2SA1037K(QR)	TRANSISTOR	
PD501	PD170V1	PHOTO DIODE	
R501	NRSA63J-154N	RESISTOR	150KΩ, 1/16W
R502	NRSA63J-123N	RESISTOR	12KΩ, 1/16W
R503	NVP1304-223N	V RESISTOR, AW INDOOR B	22KΩ
R504	NRSA63J-563N	RESISTOR	56KΩ, 1/16W
R505	NRSA63J-183N	RESISTOR	18KΩ, 1/16W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R506	NVP1304-223N	V RESISTOR, AW INDOOR R	22KΩ
	R507	NRSA63J-563N	RESISTOR	56KΩ, 1/16W
	R508	NRSA63J-223N	RESISTOR	22KΩ, 1/16W
	R509	NRSA63J-683N	RESISTOR	68KΩ, 1/16W
	R511	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R512	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R513	NRSA63J-823N	RESISTOR	82KΩ, 1/16W
	R514	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R515	NVP1304-473N	V RESISTOR, AW INDOOR R LIM	47KΩ
	R516	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R518	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R519	NVP1304-473N	V RESISTOR, AW OUTDOOR R LIM	47KΩ
	R520	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R522	QRSA08J-103Y	RESISTOR	10KΩ, 1/10W
	R523	NVP1304-473N	V RESISTOR, PRESET FL B	47KΩ
	R524	QRSA08J-333Y	RESISTOR	33KΩ, 1/10W
	R526	QRSA08J-0R0Y	RESISTOR	0Ω, 1/10W
	R527	NVP1304-473N	V RESISTOR, PRESET B OUTDOOR	47KΩ
	R528	QRSA08J-473	RESISTOR	47KΩ, 1/10W
	R530	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R531	NVP1304-473N	V RESISTOR, AW OUTDOOR B LIM	47KΩ
	R532	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R534	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R535	NVP1304-473N	V RESISTOR, AW INDOOR B LIM	47KΩ
	R536	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R538	QRSA08J-472	RESISTOR	4.7KΩ, 1/10W
	R539	NVP1304-473N	V RESISTOR, PRESET FL R	47KΩ
	R540	QRSA08J-393Y	RESISTOR	39KΩ, 1/10W
	R542	QRSA08F-223	RESISTOR	22KΩ, 1/10W
	R544	QRSA08F-473	RESISTOR	47KΩ, 1/10W
	R546	QRSA08J-0R0Y	RESISTOR	0Ω, 1/10W
	R547	NVP1304-473N	V RESISTOR, PRESET R OUTDOOR	47KΩ
	R548	QRSA08J-473	RESISTOR	47KΩ, 1/10W
	R550	QRSA08F-183Y	RESISTOR	18KΩ, 1/10W
	R552	QRSA08F-563Y	RESISTOR	56KΩ, 1/10W
	R554	NRSA63J-331N	RESISTOR	330Ω, 1/16W
	R555	NRSA63J-182N	RESISTOR	1.8KΩ, 1/16W
	R556	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R557	NRSA63J-122N	RESISTOR	1.2KΩ, 1/16W
	R558	NRSA63J-183N	RESISTOR	18KΩ, 1/16W
	R559	NVP1304-224N	V RESISTOR, AW B GAIN	220KΩ
	R560	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R561	NRSA63J-153N	RESISTOR	15KΩ, 1/16W
	R562	NRSA63J-153N	RESISTOR	15KΩ, 1/16W
	R563	NVP1304-224N	V RESISTOR, AW R GAIN	220KΩ
	R564	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R565	NRSA63J-183N	RESISTOR	18KΩ, 1/16W
	R566	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R567	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R572	NRSA63J-472N	RESISTOR	4.7KΩ, 1/16W
	R573	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R574	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R577	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R578	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R581	NRSA63J-101N	RESISTOR	100Ω, 1/16W
	R582	NRSA63J-101N	RESISTOR	100Ω, 1/16W
	C502	NCB31EK-103A	CAPACITOR	0.01µF, 25V
	C503	NEH10GM-476N	E CAPACITOR	47µF, 4.0V
	C504	NCB31HK-272A	CAPACITOR	0.0027µF, 50V
	C505	NCB31HK-272A	CAPACITOR	0.0027µF, 50V
	C506	NCB31HK-272A	CAPACITOR	0.0027µF, 50V
	C507	NEH10GM-476N	E CAPACITOR	47µF, 4.0V
	C508	NCB31EK-103A	CAPACITOR	0.01µF, 25V
	C509	NEH10JM-226N	E CAPACITOR	22µF, 6.3V
	C510	NEH11EM-475N	E CAPACITOR	4.7µF, 25V
	C511	NEH11EM-475N	E CAPACITOR	4.7µF, 25V
	C516	NCB31EK-103A	CAPACITOR	0.01µF, 25V
	L501	PU58201-220K	COIL	22µH
	or	YU41135-220K	COIL	22µH
	SW501	PU57008	TACT SWITCH, BLC	
	SW502	PU57008	TACT SWITCH, FADER	
	FIL1	YQ40394	WHITE FILTER	
	SLD1	YQ40395	SHIELD CASE	
	SLD2	YQ40396	SHILD PLATE	
	CN501	YU40101-22	CAP HOUSING, (BOARD TO BOARD)	
	CN502	YU40101-12	CAP HOUSING, (BOARD TO BOARD)	
	CN503	YU40095-4	CAP HOUSING	

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21. MIC AMP BOARD ASSEMBLY ⟨26⟩

	PWBA	YB30030A-01-C	MIC AMP BOARD ASSY	
	IC701	M5282FP	IC	
	R701	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R702	NRSA63J-562N	RESISTOR	5.6KΩ, 1/16W
	R703	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R704	NRSA63J-473N	RESISTOR	47KΩ, 1/16W
	R705	NRSA63J-221N	RESISTOR	220Ω, 1/16W
	R706	NRSA63J-223N	RESISTOR	22KΩ, 1/16W
	R708	NRSA63J-682N	RESISTOR	6.8KΩ, 1/16W
	R709	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R711	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
	R712	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	C701	ECEV1EV4R7R	E CAPACITOR	
	or	NEH31EM-475N	E CAPACITOR	4.7µF, 25V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C702	ECEV1CV470P	E CAPACITOR	
	C703	NEH10GM-476N	E CAPACITOR	47μF, 4.0V
	C704	NCT07CH-101A	CAPACITOR	100PF
	C705	ECEV1EV4R7R	E CAPACITOR	
	or	NEH31EM-475N	E CAPACITOR	4.7μF, 25V
	C706	NCB31HK-152A	CAPACITOR	0.0015μF, 50V
	C707	ECEV1EV4R7R	E CAPACITOR	
	or	NEH31EM-475N	E CAPACITOR	4.7μF, 25V
	C708	ECEV1CV470P	E CAPACITOR	

* * *

22. INDICATOR-2 BOARD ASSEMBLY 〈27〉

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	YB20288B-01	IND-2 BOARD ASSY	
	IC801	VC2085	IC	
	IC802	M5M5256FP	IC	
	or	SRM20256LM	IC	
	or	UPD43256AGU	IC	
	or	CXK58256MM	IC	
	or	UPD43256GU	IC	
	or	M5M5256BFP	IC	
	or	CXK58257M	IC	
	IC803	M54641FP	IC	
	IC804	MN12821(QR)	IC	
	Q801	2SA1532(BC)	TRANSISTOR	
	D801	MA714	DIODE	
	D802	MA141WA	DIODE	
	D803	RD6.8M(B2)	ZENER DIODE	
	or	RD6.8M(B1)	ZENER DIODE	
	R801	NVP1304-222N	V RESISTOR, TITLE OSC	2.2KΩ
	R802	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
	R803	ERT-D2FGL601S	THERMISTOR	
	R804	NRSA63J-121N	RESISTOR	120Ω, 1/16W
	R805	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R806	NRSA63J-104N	RESISTOR	100KΩ, 1/16W
	R811	NRSA63J-101N	RESISTOR	100Ω, 1/16W
	R812	NRSA63J-101N	RESISTOR	100Ω, 1/16W
	R813	NRSA63J-682N	RESISTOR	6.8KΩ, 1/16W
	R814	NRSA63J-472N	RESISTOR	4.7KΩ, 1/16W
	R815	NRSA63J-153N	RESISTOR	15KΩ, 1/16W
	R816	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
	R820	NRSA63J-472N	RESISTOR	4.7KΩ, 1/16W
	R821	NRSA63J-225N	RESISTOR	2.2MΩ, 1/16W
	R822	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R823	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R824	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R826	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R828	NRSA63J-0R0A	RESISTOR	0Ω, 1/16W
	R829	NRSA63J-471N	RESISTOR	470Ω, 1/16W
	C802	QEF81CM-226	TANTAL CAPACITOR	22μF, 16V
	C803	NCT07CH-181A	CAPACITOR	180PF
	C804	NEH11CM-106N	E CAPACITOR	10μF, 16V
	or	NEH31CM-106N	E CAPACITOR	10μF, 16V
	C805	NEH10JM-226N	E CAPACITOR	22μF, 6.3V
	or	NEH30JM-226N	E CAPACITOR	22μF, 6.3V
	C806	NCR21CM-473A	CAPACITOR	0.047μF, 16V
	C807	NCF31CZ-104A	CAPACITOR	0.1μF, 16V
	C812	NCB31HK-391A	CAPACITOR	390PF, 50V
	L801	PU58201-120K	COIL	12μH
	L802	PU58201-120K	COIL	12μH
	SPC1	YQM30019-5	PAD	
	SPC2	YQM30019-8	PAD	
	CN801	YU40105-12	CAP HOUSING, (BOARD TO BOARD)	
	CN804	YU40096-4	CAP HOUSING	
	CN805	YU40096-2	CAP HOUSING	

* * *

23. SWITCH BOARD ASSEMBLY 〈28〉

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	YB20169A-02-C	SWITCH BOARD ASSY	
	R901	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R902	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R903	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R904	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R905	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	SW901	YU41095-Z	TACT SWITCH	
	SW902	YU41095-Z	TACT SWITCH	
	SW903	YU41095-Z	TACT SWITCH	
	SW904	YU41095-Z	TACT SWITCH	
	SW905	YU41095-Z	TACT SWITCH	
	CN901	YU40096-6	CAP HOUSING	

* * *

24. LED BOARD 〈33〉

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWB	YB40001	LED BOARD	
	D1	SIM-20ST	LE DIODE	

* * *

25. END SENSOR BRACKET ASSY 〈34〉

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	YS40013C	END SENSOR BRACKET ASSY	

✱✱※✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱

26. E. VIEWFINDER BOARD ASSY ⟨50⟩

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
⚠	PWBA	YU30181-015	E. VF BOARD ASSY	
⚠	IC1	AN2512S	IC	
	IC2	AN78L05	IC	
	D01	DCB010	DIODE	
		or HSM2838	DIODE	
		or DAN202K	DIODE	
		or MA151WK	DIODE	
		or ISS184	DIODE	
		or MC2838	DIODE	
	D02	ERA15-06	DIODE	
		or DSA1B6	DIODE	
		or RGP10G	DIODE	
	D03	MA152WK	DIODE	
	D04	ERA15-06	DIODE	
		or RGP10G	DIODE	
		or DSA1B6	DIODE	
	D05	DCB010	DIODE	
		or MA151WK	DIODE	
		or HSM2838	DIODE	
		or ISS184	DIODE	
		or DAN202K	DIODE	
		or MC2838	DIODE	
	VR1	YU30181-502	V. RESISTOR, V. SIZE	
	VR2	YU30181-503	V. RESISTOR, H. HOLD	
	VR3	YU30181-504	V. RESISTOR, CONT	
	VR4	YU30181-505	V. RESISTOR, BRIGHT	
	R01	QRSA08J-3R9	RESISTOR	3.9Ω, 1/10W
	R02	QRSA08J-363	RESISTOR	36KΩ, 1/10W
	R04	QRSA08J-514	RESISTOR	510KΩ, 1/10W
	R06	QRSA08J-122	RESISTOR	1.2KΩ, 1/10W
	R07	QRSA08J-104	RESISTOR	100KΩ, 1/10W
	R08	QRSA08J-122	RESISTOR	1.2KΩ, 1/10W
	R09	QRSA08J-561	RESISTOR	560Ω, 1/10W
	R10	QRSA08J-472	RESISTOR	4.7KΩ, 1/10W
	R14	QRSA08J-471	RESISTOR	470Ω, 1/10W
	R15	QRSA08J-471	RESISTOR	470Ω, 1/10W
	R16	QRSA08J-471	RESISTOR	470Ω, 1/10W
	R20	QRSA08J-512	RESISTOR	5.1KΩ, 1/10W
	R21	QRSA08J-512	RESISTOR	5.1KΩ, 1/10W
	R22	QRSA08J-103	RESISTOR	10KΩ, 1/10W
	R23	QRSA08J-102	RESISTOR	1KΩ, 1/10W
	R24	QRSA08J-273	RESISTOR	27KΩ, 1/10W
	R30	QRSA188J-335	RESISTOR	3.3MΩ, 1/8W
	R31	QRSA188J-335	RESISTOR	3.3MΩ, 1/8W
	R32	QRSA08J-332	RESISTOR	3.3KΩ, 1/10W
	R41	QRSA08J-125	RESISTOR	1.2MΩ, 1/10W
	R51	QRSA08J-180	RESISTOR	18Ω, 1/10W
	R55	QRSA08J-200	RESISTOR, RX	20Ω, 1/10W
	C01	YU30181-506	TANTAL CAPACITOR	
	C02	QCYA1EK-223	CAPACITOR	0.022μF, 25V
	C03	QEK41HM-105	CAPACITOR	1μF, 50V
	C04	QEK41HM-225	CAPACITOR	2.2μF, 50V
	C05	QEK41CM-106	CAPACITOR	10μF, 16V
	C10	QEK41AM-107	CAPACITOR	100μF, 10V
	C11	QEK40JM-227	CAPASITOR	220μF, 6.3V
	C12	QEK41AM-107	CAPACITOR	100μF, 10V
	C20	QCTA1CH-161	CAPACITOR	160PF, 16V
	C21	QEK41HM-335	CAPACITOR	3.3μF, 50V
	C24	QCFA1EZ-333	CAPACITOR	0.033μF, 25V
	C30	QCF81CZ-105	CAPACITOR	1μF, 16V
	C31	QEK41HM-335	CAPACITOR	3.3μF, 50V
	C32	YU30181-507	CAPACITOR	
	C33	PU59343	FILM CAPACITOR (1500P/400)	
	L01	YU30181-509	H. L. C	
	TR1	2SC2812	TRANSISTOR	
		or 2SC3052	TRANSISTOR	
		or 2SD601A	TRANSISTOR	
		or 2SC2712	TRANSISTOR	
		or 2SC2462	TRANSISTOR	
		or 2SC2412K	TRANSISTOR	
⚠	TR2	2SD1665M	TRANSISTOR	
		or 2SD1815	TRANSISTOR	
		or 2SD667A	TRANSISTOR	
		or 2SD774	TRANSISTOR	
		or 2SC3665	TRANSISTOR	
⚠	T1	YU30181-510	FLY BACK TRANS, FBT	
	WR1	YU30181-013	VF CABLE	
	CN1	PU58656-5	CAP HOUSING	
	CN2	PU58656-4	CAP HOUSING	
⚠	CP1	ICP-N10	CIRCUIT PROTECTOR	
⚠	TF1	YU30181-508	THERMISTOR	

SECTION 8
TECHNICAL INFORMATIONS

8.1 MECHACON CPU PIN FUNCTION (IC401)

Pin No.	Label	IN/OUT	Note	
1	FADER REQUEST (⎍)	OUT		To IND
2	REC INDICATE (H)	OUT		
3	TAPE END (H)	OUT	From 2 minutes before tape end	
4	BATTERY ALARM (H)	OUT	When the supply voltage becomes 9.2 V	
5	BATTERY CHECK	IN	9.2 V (ALARM), 8.8 V (POWER OFF)	ANALOG INPUT
6	END SENSOR	IN	Detect the tape end	
7	MECHA DATA B	IN	Detect the mechanism condition	
8	MECHA DATA A			
9	KEY B	IN	Operation keys input	
10	KEY A			
11	TRIGGER SW ON (L)	IN		
12	FULL ERASE HEAD ON (H)	OUT		
13	TEST 1	IN	When both High : NORM mode When both Low : EMERGENCY OFF mode	
14	TEST 0			
15	COUNTER OE (H)	OUT	For LCD	
16	SERIAL CLOCK	IN		
17	SERIAL DATA	OUT		
18	FLYING ERASE HEAD ON (H)	OUT		
19	CAPSTAN FG	IN	BACK SPACE EDIT, TAPE END ALARM	
20	POWER SW ON (L)	IN		
21	FADER MODE (H)	IN		
22	TRIGGER ALARM (⎍)	OUT		
23	DRUM FF	IN	DRUM ROTATE DET, REC START TIMING, END LED ON TIMING	
24	GND	–		
25	RESET (L)	IN		
26	X IN	IN	4 MHz CLOCK OSC	
27	X OUT	OUT		
28	NC	–		
29	GND	–		
30	HEAD SW PULSE D	IN	REC START TIMING	
31	HEAD SW PULSE A			
32	CTL PULSE	IN	EDITING POINT DET	
33	SUPPLY REEL FG	IN	SUPPLY REEL ROTATE DET, TAPE END ALARM DET	
34	REMOTE	IN	SERIAL REMOTE PULSE INPUT from RM-V15	
35	NTSC (L)/PAL (H)	IN		
36	CAM B	IN	Detect the mechanism mode	
37	CAM A			
38	REC CTL PULSE DUTY	OUT	65% (H)/55% (L)	
39	CAPSTAN CONTROL	OUT	MECHACON (H)/SERVO (L)	
40	SEARCH (H)	OUT	MODE PB INSERT ASB REC	
41	SERVO MODE I	OUT	I L H L H	
42	SERVO MODE A		A L L H H	
43	AUDIO MUTE (H)	OUT		
44	AUDIO EE (H)	OUT		
45	PAUSE (H)	OUT		
46	AUDIO REC MUTE (L)	OUT		
47	CAMERA or PB (H)/EXT (L)	OUT		
48	DRUM ON (H)	OUT	After middle point	
49	RETAKE REW (H)	OUT		
50	COUNTER OPERATE (L)	OUT		
51	COUNT UP (H)/DOWN (L)	OUT		
52	VIDEO REC MUTE (L)	OUT		
53	VIDEO MUTE (L)	OUT		
54	VIDEO REC (L)	OUT		
55	VIDEO PB (L)	OUT		
56	END LED (⊔)	OUT	Pulse drive	
57	AFTER LOADING (L)	OUT	Mode control motor drive voltage up	
58	LOAD REV (H)	OUT	NORM L FWD L REV H BRAKE H	
59	LOAD FWD (H)		L H L H	
60	V. PULSE ON (H)	OUT	SEARCH or STILL (H)	
61	LP (H)/SP (L)	OUT		
62	REMOTE PAUSE (L)	OUT	For MASTER EDIT	
63	CAPSTAN REV (L)	OUT	CAPSTAN MOTOR DIRECTION CONTROL	
64	CAPSTAN FWD (L)			
65	GND	–		
66	POWER ON (H)	OUT		
67	Vcc	–		
68	GND	–		
69	NC	–		
70	CAP MOTOR REF	OUT		
71	NC	–		
72	CAMERA POWER ON (H)	OUT		

Table 8-1 Mechacon CPU pin function

8.2 DIGITAL SERVO LSI (IC101)

All the terminal functions of IC101 are listed here for reference in servicing.

MODE				Pin No.
REC	ASB	INST	PB	
H	H	L	L	1
H	L	H	L	2

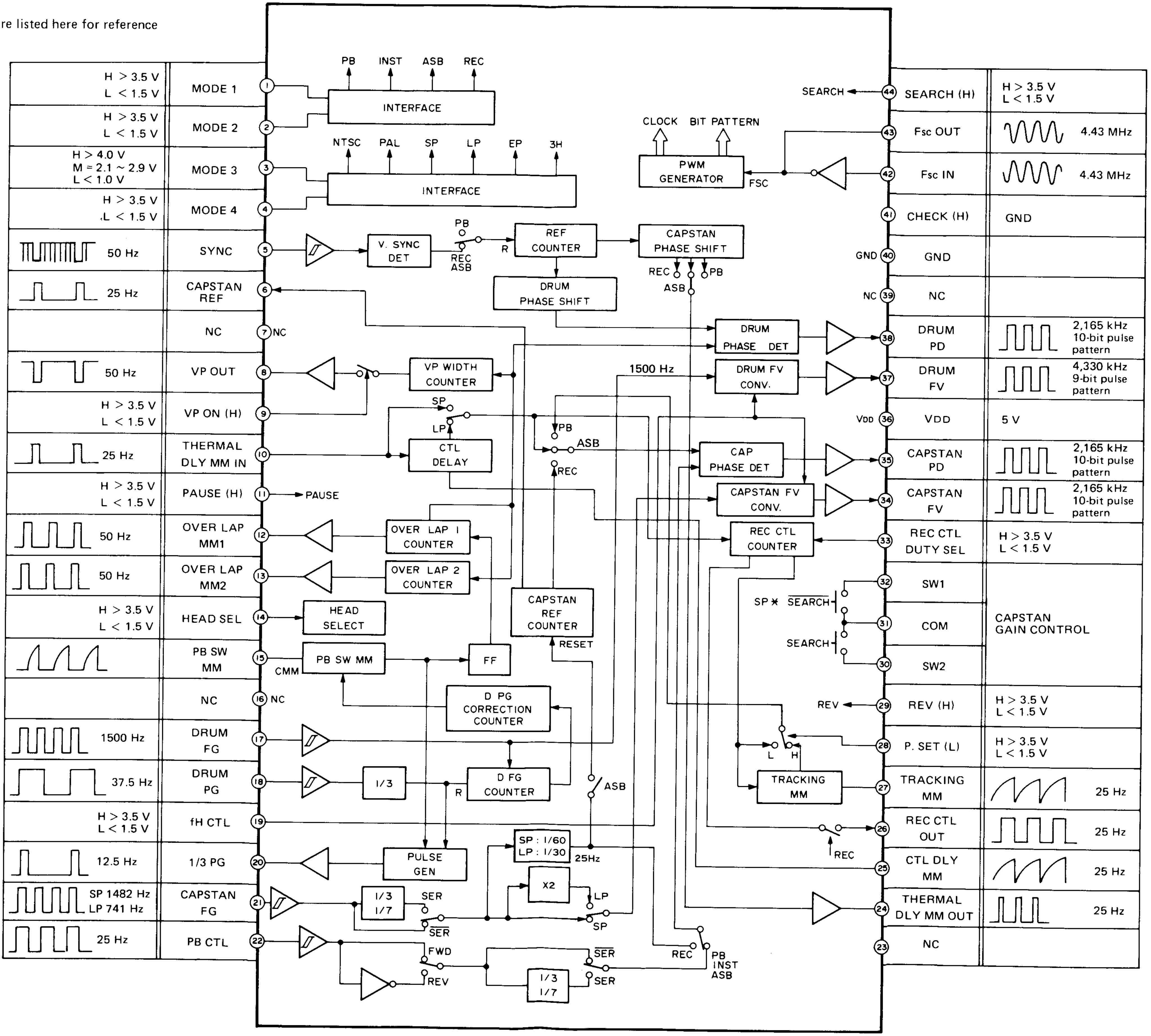
MODE						Pin No.
PAL		NTSC				
9H	3H	9H		3H		
LP	SP	EP	SP	EP	SP	
H	H	M	M	L	L	3
H	L	H	L	H	L	4

MODE		Pin No.
VP		
ON	H	9
OFF	L	

MODE		Pin No.
PAUSE		
ON	H	11
OFF	L	

MODE		Pin No.
HEAD SEL		
4 HEAD	H	14
DA 8	L	

MODE		Pin No.
FH CTL		
FH ON	H	19
FH OFF	L	



H > 3.5 V
L < 1.5 V
MODE 1
H > 3.5 V
L < 1.5 V
MODE 2
H > 4.0 V
M = 2.1 ~ 2.9 V
L < 1.0 V
MODE 3
H > 3.5 V
L < 1.5 V
MODE 4
50 Hz
SYNC
25 Hz
CAPSTAN REF
NC
50 Hz
VP OUT
H > 3.5 V
L < 1.5 V
VP ON (H)
25 Hz
THERMAL DLY MM IN
H > 3.5 V
L < 1.5 V
PAUSE (H)
50 Hz
OVER LAP MM1
50 Hz
OVER LAP MM2
H > 3.5 V
L < 1.5 V
HEAD SEL
PB SW MM
NC
1500 Hz
DRUM FG
37.5 Hz
DRUM PG
H > 3.5 V
L < 1.5 V
fH CTL
12.5 Hz
1/3 PG
SP 1482 Hz
LP 741 Hz
CAPSTAN FG
25 Hz
PB CTL
PB
INST
ASB
REC
INTERFACE
NTSC
PAL
SP
LP
EP
3H
INTERFACE
V. SYNC DET
PB
REC
ASB
R
REF COUNTER
CAPSTAN PHASE SHIFT
REC
PB
ASB
DRUM PHASE SHIFT
CLOCK
BIT PATTERN
PWM GENERATOR
FSC
SEARCH
GND
NC
VDD
NC
PAUSE
DRUM PHASE DET
1500 Hz
DRUM FV CONV.
VP WIDTH COUNTER
SP
LP
CTL DELAY
PB
ASB
REC
CAP PHASE DET
CAPSTAN FV CONV.
REC CTL COUNTER
OVER LAP 1 COUNTER
OVER LAP 2 COUNTER
HEAD SELECT
CAPSTAN REF COUNTER
RESET
SP ✱ SEARCH
SEARCH
CMM
PB SW MM
FF
NC
D PG CORRECTION COUNTER
REV
L
H
TRACKING MM
1/3
R
D FG COUNTER
ASB
REC
SP : 1/60
LP : 1/30
25Hz
PULSE GEN
X2
1/3
1/7
SER
SER
LP
SP
FWD
REV
SER
SER
1/3
1/7
REC
PB
INST
ASB
SEARCH (H)
H > 3.5 V
L < 1.5 V
Fsc OUT
4.43 MHz
Fsc IN
4.43 MHz
CHECK (H)
GND
GND
NC
DRUM PD
2,165 kHz
10-bit pulse pattern
DRUM FV
4,330 kHz
9-bit pulse pattern
VDD
5 V
CAPSTAN PD
2,165 kHz
10-bit pulse pattern
CAPSTAN FV
2,165 kHz
10-bit pulse pattern
REC CTL DUTY SEL
H > 3.5 V
L < 1.5 V
SW1
COM
SW2
CAPSTAN GAIN CONTROL
REV (H)
H > 3.5 V
L < 1.5 V
P. SET (L)
H > 3.5 V
L < 1.5 V
TRACKING MM
25 Hz
REC CTL OUT
25 Hz
CTL DLY MM
25 Hz
THERMAL DLY MM OUT
25 Hz
NC

Fig. 8-1 Block diagram of IC101 with terminal functions

Pin No.	MODE	
	SEARCH	
44	H	SEARCH
	L	NORM

Pin No.	MODE	
	REC CTL DUTY	
33	H	65%
	L	55%

Pin No.	MODE	
	REV	
29	H	REV
	L	NORM

Pin No.	MODE	
	P. SET	
28	H	OFF
	L	ON

8.3 INDICATOR I/O

PIN No.	LABEL	IN/OUT	CONTENTS	
1	LLL	IN	Low : LOW LIGHT	
2	CHARACTER	IN	WHITE BALANCE indication (Low : CHARACTER, High : ALPHABET)	
3	NTSC/PAL	IN	Low : NTSC, High : PAL	
4	TAPE END	IN	High : TAPE END	
5	VIDEO REC	IN	Low : REC mode	
6	SP/LP	IN	High : LP, Low : SP	
7	VIDEO PB (L)	IN	Low : INDICATOR OFF	
8	ALC	IN	Not used	
9	RESET (L)	IN		
10	SMTH CHARACTER 1	OUT	CHARACTER OUTPUT for Electronic Viewfinder	
11	FRINGE 1	OUT	Not used	
12	FRINGE 2	OUT	FRINGE signal OUTPUT for DATE/TIME REC	
13	SMTH CHARACTER 2	OUT	CHARACTER signal OUTPUT for DATE/TIME REC	
14	CL 1	IN		
15	CL 2	IN		
16	STOP (L)	IN	High : CAMERA ON, Low : CAMERA OFF	
17	CANCEL (L)	IN	Low : FADER CANCEL	
18	CL 3	IN		
19	NC	–		
20	NC	–		
21	NC	–		
22	NC	–		
23	VD	IN	Vertical Drive Pulse	
24	HD	IN	Horizontal Drive Pulse	
25	VDD	IN	5 V	
26	OSC 1	IN	6 MHz	
27	OSC 2	OUT	6 MHz	
28	Vss 1	IN	GND	
29	Vss 2	IN	BACK UP GND	
30	Vss 3	IN	CLOCK GND	
31	X 1	IN	32 kHz	
32	X 2	OUT	32 kHz	
33	LAP RESET	IN	DATE UNIT	Low : REC TIME RESET button ON or CAMERA OFF
34	TIME REC ON/OFF	IN		Low : DATE/TIME REC button ON
35	REC SEL	IN		Low : DISPLAY SELECT button ON
36	ADJUST SEL	IN		Low : SELECT button ON
37	SET	IN		Low : DISPLAY SET button ON
38	LAP ON/OFF	IN		High : LAP indication, Low : No LAP indication
39	12H/24H	IN	High : 24H indication, Low : 12H indication	
40	DATE 1	IN	DATE SELECT	1 : Low, 2 : Low 60 . 12 . 17 PM 3 : 30 1 : High, 2 : Low 17 . 12 . 60 PM 3 : 30 1 : High, 2 : High 12/17 . 60 PM 3 : 30 1 : Low, 2 : High DEC. 17 : 60 PM 3 : 30
41	DATE 2	IN		
42	IND (H)	IN	"FADER" BLINK	
43	MODE 1	IN	W.BAL.MODE FEEDBACK	1 : Low, 2 : Low INDOOR 1 : Low, 2 : High FL 1 : High, 2 : Low OUTDOOR 1 : High, 2 : High (AUTO)
44	MODE 2	IN		
45	FULL AUTO	IN	Low : FULL AUTO button ON	
46	WHITE BALANCE	IN	Low : WHITE BALANCE SELECT	
47	FOCUS	IN	Low : FOCUS button ON	
48	SHUTTER	IN	Low : SHUTTER button ON	
49	FADER	IN	Low : FADER button ON	
50	P1	IN		
51	FADER	OUT	High : FADER reserved	
52	NC	–		
53	NC	–		
54	SHUTTER 1	OUT	SHUTTER MODE SET	1 : Low, 2 : Low STANDARD 1 : Low, 2 : High 1/250 1 : High, 2 : Low 1/500 1 : High, 2 : High 1/1000
55	SHUTTER 2	OUT		
56	WBO 1	OUT	W. BAL. MODE SET	1 : Low, 2 : Low INDOOR 1 : Low, 2 : High FL 1 : High, 2 : Low OUTDOOR 1 : High, 2 : High AUTO
57	WBO 2	OUT		
58	AUTO FOCUS	OUT	High : AUTO FOCUS	
59	NC	–		
60	P2	IN		
61	FRONT FOCUS	IN		
62	CENTER FOCUS	IN		
63	BACK FOCUS	IN		
64	BATTERY	IN	High : BATTERY ALARM	

CL1	CL2	CL3	COLOR
H	H	H	WHT
H	H	L	YEL
H	L	H	CYAN
H	L	L	GRN
L	H	H	PURP
L	H	L	RED
L	L	H	BLUE
L	L	L	BLK

▶■◀	◀	▶	■
H	H	L	H
H	H	H	L
H	L	H	H

P 1	P 2	Page
L	L	P 1
H	L	P 2
L	H	P 3
H	H	P 4

Table 8-2 IND controller pin functions

ELECTRONIC VIEWFINDER DISPLAY	LABEL	BLINK (2 Hz)	BLINK (1 Hz)	CAM EE	IND	FAD 0	SHUTTER 2	SHUTTER 1	LAP	LP/EP	V. REC	TAPE END	NTSC/PAL	CHARACTER	WBO B	WBO A	LLL	BATTERY	AUTO FOCUS	FRONT FOCUS	CENTER FOCUS	BACK FOCUS	P2	P1	CL3	CL2	CL1
	IC301 PIN NO.	–	–	7	42	51	55	54	38	6	5	4	3	2	57	56	1	64	58	61	62	63	59	63	18	15	14
FOCUS	■			H															L	H	L	H					
	▶			H															L	H	H	L					
	◀			H															L	L	H	H					
	▶■◀		○	H															L	H	H	H					
	(AUTO)			H															H								
– BATTERY –			○	H														H									
LIGHT			○	H													L										
W. BALANCE	💡			H										L	L	L											
	▭			H										L	H	L											
	☀			H										L	L	H											
	INDOOR			H										H	L	L											
	FL LAMP			H										H	H	L											
	OUTDOOR			H										H	L	H											
	(AUTO)														H	H											
DECK MODE	REC			H						H	L	L															
	—			H						H	H	L															
	REC	○		H						H	L	H															
	EP REC			H						L	L	L	L														
	EP —			H						L	H	L	L														
	EP REC	○		H						L	L	H	L														
	LP REC			H						L	L	L	H														
	LP —			H						L	H	L	H														
	LP REC	○		H						L	L	H	H														
LAP	1 : 23 : 45			H					H																		
FADER	FADER			H		H																					
	FADER	○		H	H	H																					
SHUTTER	S1000			H			H	H																			
	S500			H			L	H																			
	S250			H			H	L																			
	(STD)			H			L	L																			
SUPERIMPOSE	P1																						L	L			
	P2																						H	L			
	P3																						L	H			
	P4																						H	H			
	WHT																								H	H	H
	YEL																								L	H	H
	CYAN																								H	L	H
	GRN																								L	L	H
	PURP																								H	H	L
	RED																								L	H	L
	BLUE																								H	L	L
	BLK																								L	L	L

Table 8-3 Electronic viewfinder display

SECTION 9
SERVICE GUIDE

9.1 EMERGENCY MODE TABLE

Display (Flash)	Symptom	Mode when observed	Resulting mode
▶▶	P.B. CTL pulse input absent	During Zero Frame Editing	STOP
◀◀	–	–	–
▶▶▶	Drum flipflop input absent	Drum rotation, Zero Frame Editing	STOP
◀◀ ▶	Reel sensor input absent	PB, REC, SEARCH FF	STOP
▶II	Loading motor rotates for more than 10 sec without shift to next mode	Loading, Unloading	Mode continues

Emergency mode : Indication for 5 minutes, then power OFF (power not turned OFF when using AC adapter)
Port states : Same as Stop mode
Effective key : POWER
Shifted mode : Power OFF
No. 6 : Emergency shut-off can be used for short test, etc.
Emergency input is "H" at EMG terminal.
Power OFF in all modes and all I/O are initialized.